ENGINEERING NEWS-RECORD

EIGHTIETH YEAR OF PUBLICATION

★
★

A McGRAW HILL PUBLICATION

E B POWER
UNIVERSITY MICROFILMS IN
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GS N

COOL
LOW 29.59
HIGH 30.39
STATIONARY
LOW 29.65
LOW 29.62
HIGH 30.05
HIGH
COLD
WARM
WARM
WARM

Reliable weather forecasts—underground

"Wet and sloppy" meant real trouble when it applied to subgrades under highways, railways and airports. The problem was twofold.

Excess groundwater was hard to detect and in many cases the first indication was damage to expensive surface installations. More important, even when engineers knew about excess water, corrective measures were often uncertain and expensive.

Increased emphasis on soil surveys and improved techniques put the spotlight on areas having excess water. Then Armco engineers made it easy to make a positive subgrade forecast of "dry and firm." They developed Hel-Cor Perforated Pipe.

It is low in cost, easy to handle and durable. Long lengths and tight, positive joints withstand shifting soils, frost action and the impact and vibration of heavy loads. Scientifically-placed holes collect unwanted water and drain it off along the pipe invert. Armco Pipe assures years of maintenance-free service. It meets all the needs of a first-class subdrainage system.

Providing better products to meet specific needs has been standard practice at Armco for more than 40 years.

Today you can bring your drainage and construction problems to Armco with full assurance that you will receive all the benefits of long experience, extensive research facilities and a real interest in helping you solve these problems.

Armco has a complete range of engineered products and convenient authoritative data to help you. If your problem is difficult or unusual, why not talk it over with us.

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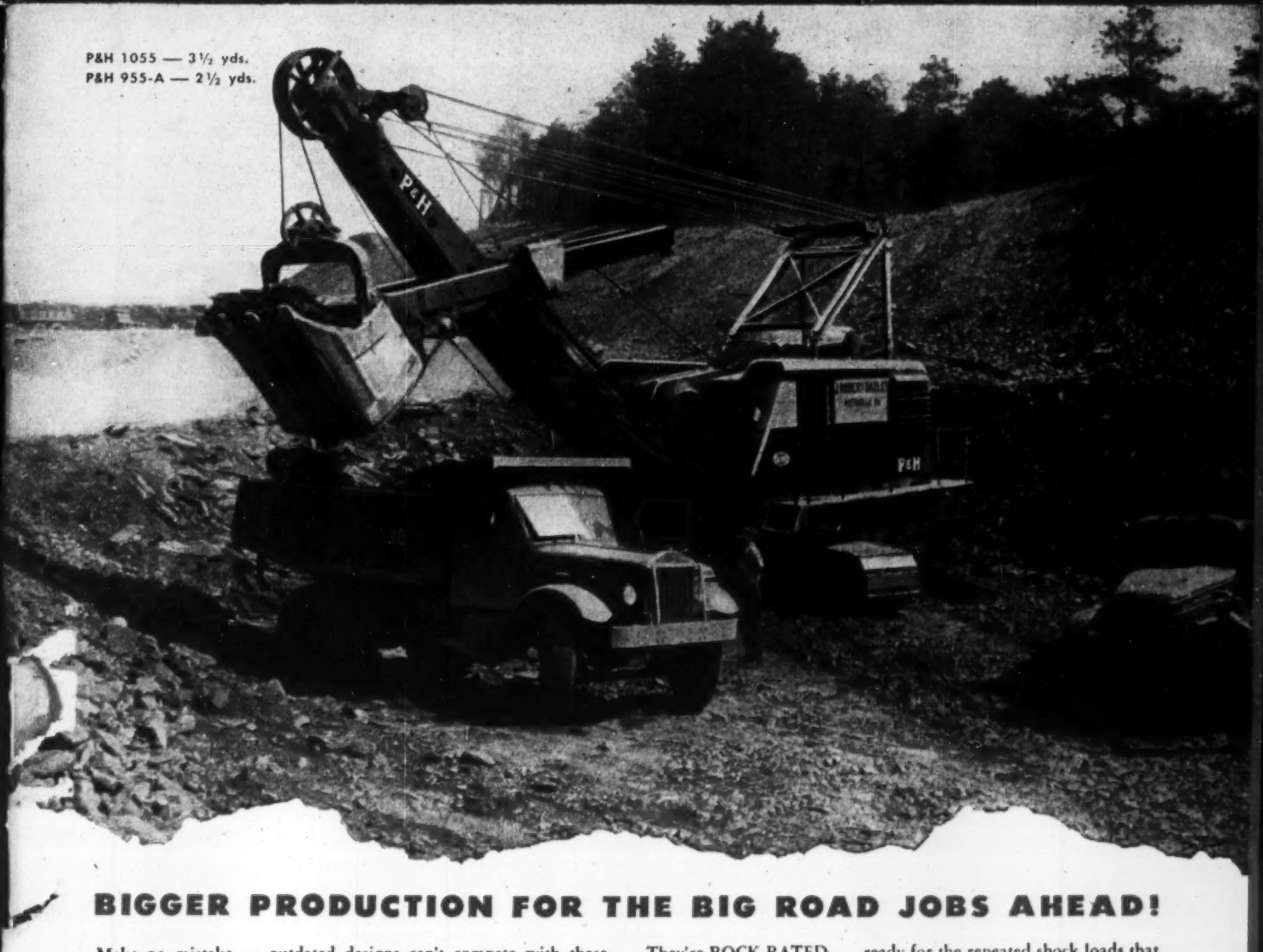
ROCK-RATED!

P&H MAGNETORQUE*

gives highway work a new *PUSH!*

Friction-free swing speeds up digging cycle — gives you 20% more output.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P&H 955-A — 2½ yds.
P&H
P&H

BIGGER PRODUCTION FOR THE BIG ROAD JOBS AHEAD!

Make no mistake — outdated designs can't compete with these modern P&H machines! This is the time to convince yourself!

Watch a Magnetorque-equipped machine go through its paces. Note the smoother, faster swing! Compare the yardage! And remember, there's no time out for pampering swing friction clutches. P&H Magnetorque does it electro-magnetically. No friction — no wear. No bothersome adjustments. Magnetorque lasts the life of your machine.

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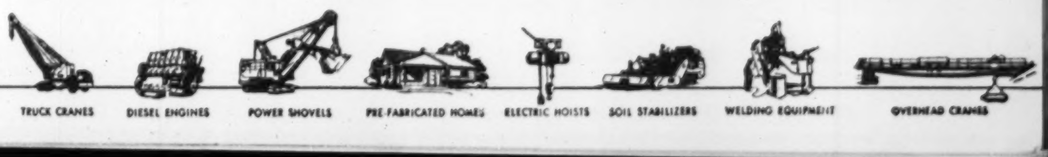
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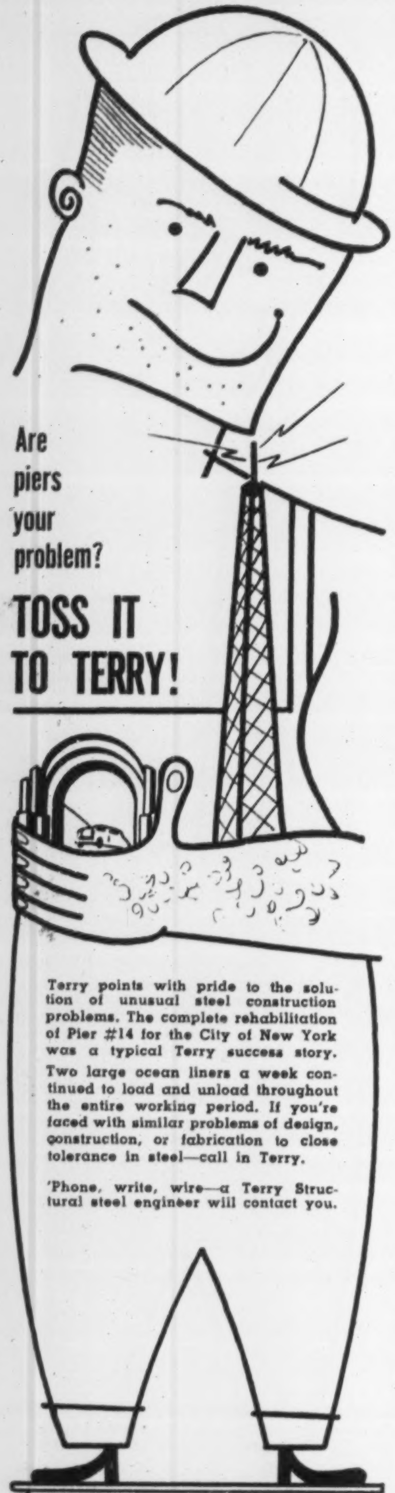

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ENGINEERING NEWS-RECORD

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Number of copies of this issue printed: 63,571

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Robert F. Boger
Publisher

May 20, 1954 **ENGINEERING NEWS-RECORD** Vol. 152, No. 20

Member ABC andABP

Published weekly by McGraw-Hill Publishing Company, Inc., James H. McGraw (1860-1948), Founder. **Publication Office, 99-129 North Broadway, Albany 1, N. Y.**

Executive, Editorial and Advertising Offices: McGraw-Hill Building, 330 W. 42nd St., New York 36, N. Y. Donald C. McGraw, President; Willard Chevalier, Executive Vice-President; Joseph A. Gerardi, Vice-President and Treasurer; John J. Cooke, Secretary; Paul Montgomery, Senior Vice-President, Publications Division; Ralph B. Smith, Vice-President and Editorial Director; Nelson Bond, Vice-President and Director of Advertising; J. E. Blackburn, Jr., Vice-President and Director of Circulation.

Subscriptions: Address correspondence to Engineering News-Record—Subscription Service, 99-129 North Broadway, Albany 1, N. Y., or 330 W. 42nd St., New York 36, N. Y. Allow one month for change of address.

Subscriptions are solicited only from persons with an identifiable commercial or professional interest in construction and building. Position and company connection must be indicated on subscription orders.

Single copies 35¢. Subscription rates—United States and possessions, $6.00 a year; $9.00 for two years; $12.00 for three years. Canada $8.00 a year; $12.00 for two years; $16.00 for three years. Other Western Hemisphere countries, $15.00 a year; $25.00 for two years; $30.00 for three years. All other countries, $20.00 a year; $30.00 for two years; $40.00 for three years. Entered as second class matter October 29, 1936, at the Post Office at Albany, N. Y., under Act of Mar. 3, 1879. Printed in U. S. A.

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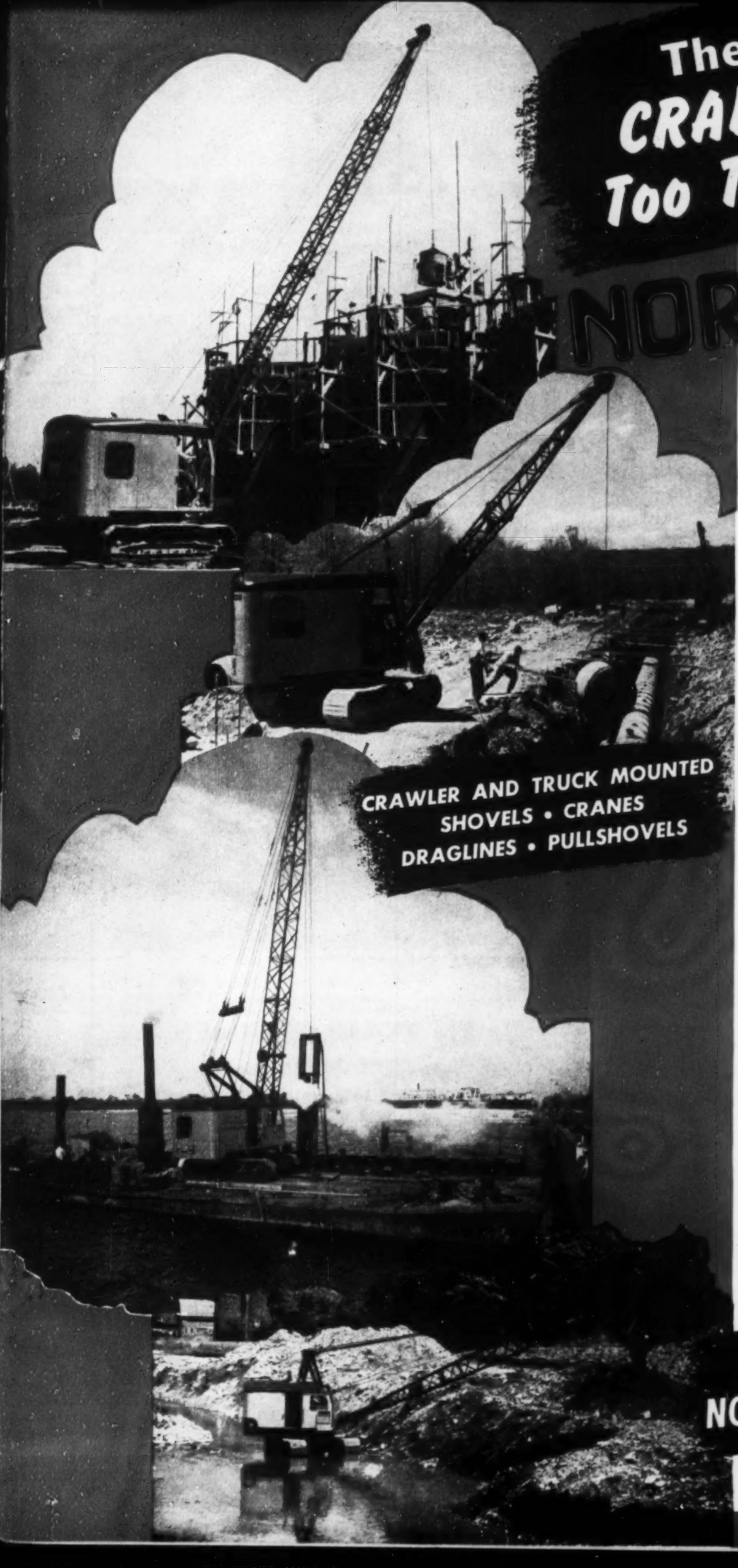
There is no CRANE PROBLEM Too TOUGH for a

NORTHWEST



CRAWLER AND TRUCK MOUNTED
SHOVELS • CRANES
DRAGLINES • PULLSHOVELS

● It isn't the job or the parts of a job that you know about that eats up cost. It's meeting the unexpected. That's the thing about Northwest Cranes. There is no crane problem too tough within their rated capacity. Northwest Crawlers get you there — and back. They are "sea going" on barges if need be. They work on inclines. They handle the tricky jobs with high booms or they will lay the boom out flat for reach.

A choice of Boom Hoist equipment helps you meet any condition and permits one, two or three load lines. Smooth swing, smooth control — assure fast spotting — and perhaps most important of all, conversion is easy when work as a crane is done. It can be quickly converted in the field to a Dragline, Shovel or Pullshovel. Remember — no crane job *too tough!* Ask for complete details.

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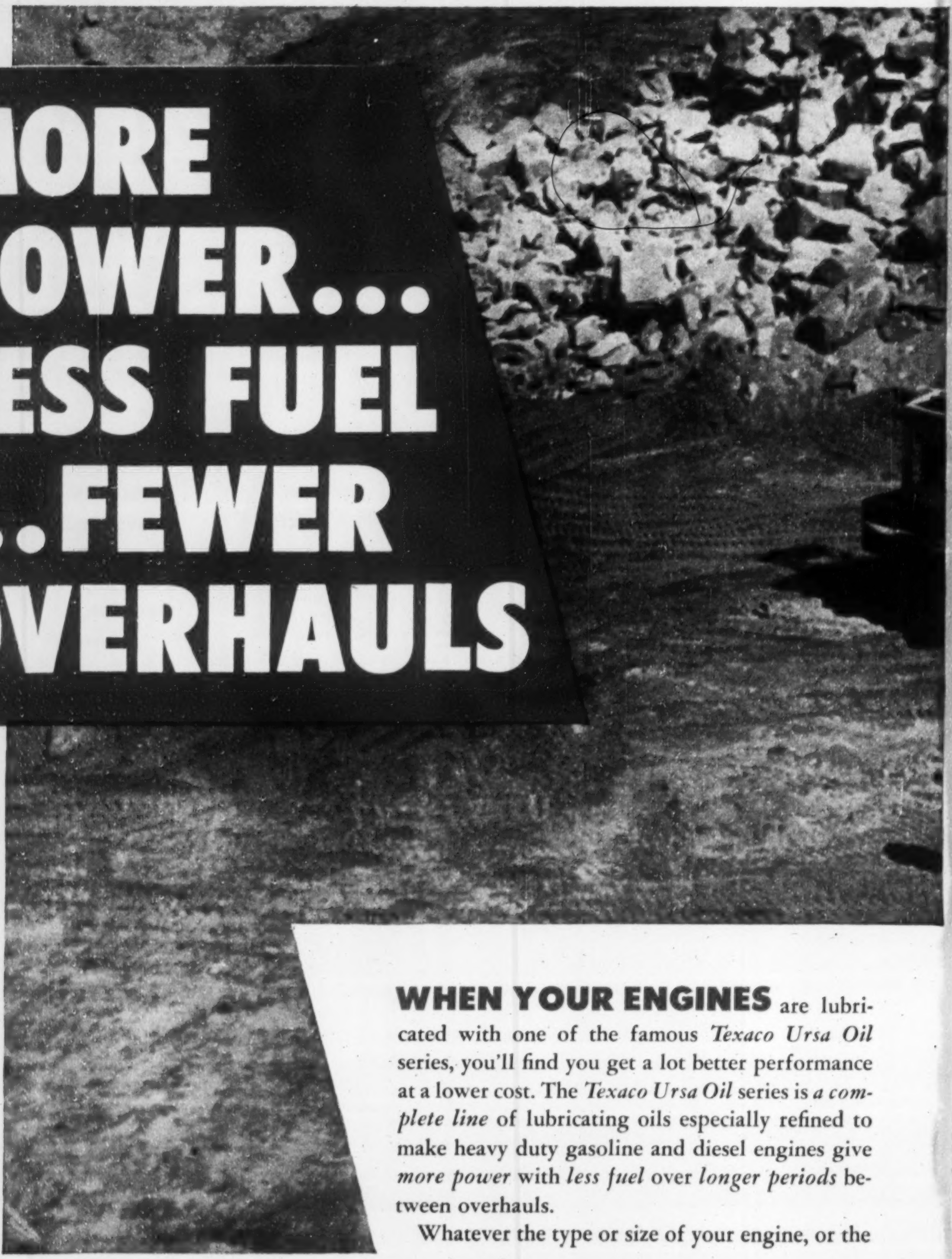
Ask about the NORTHWEST TRUCK CRANE

MORE POWER... LESS FUEL ...FEWER OVERHAULS



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Whatever the type or size of your engine, or the

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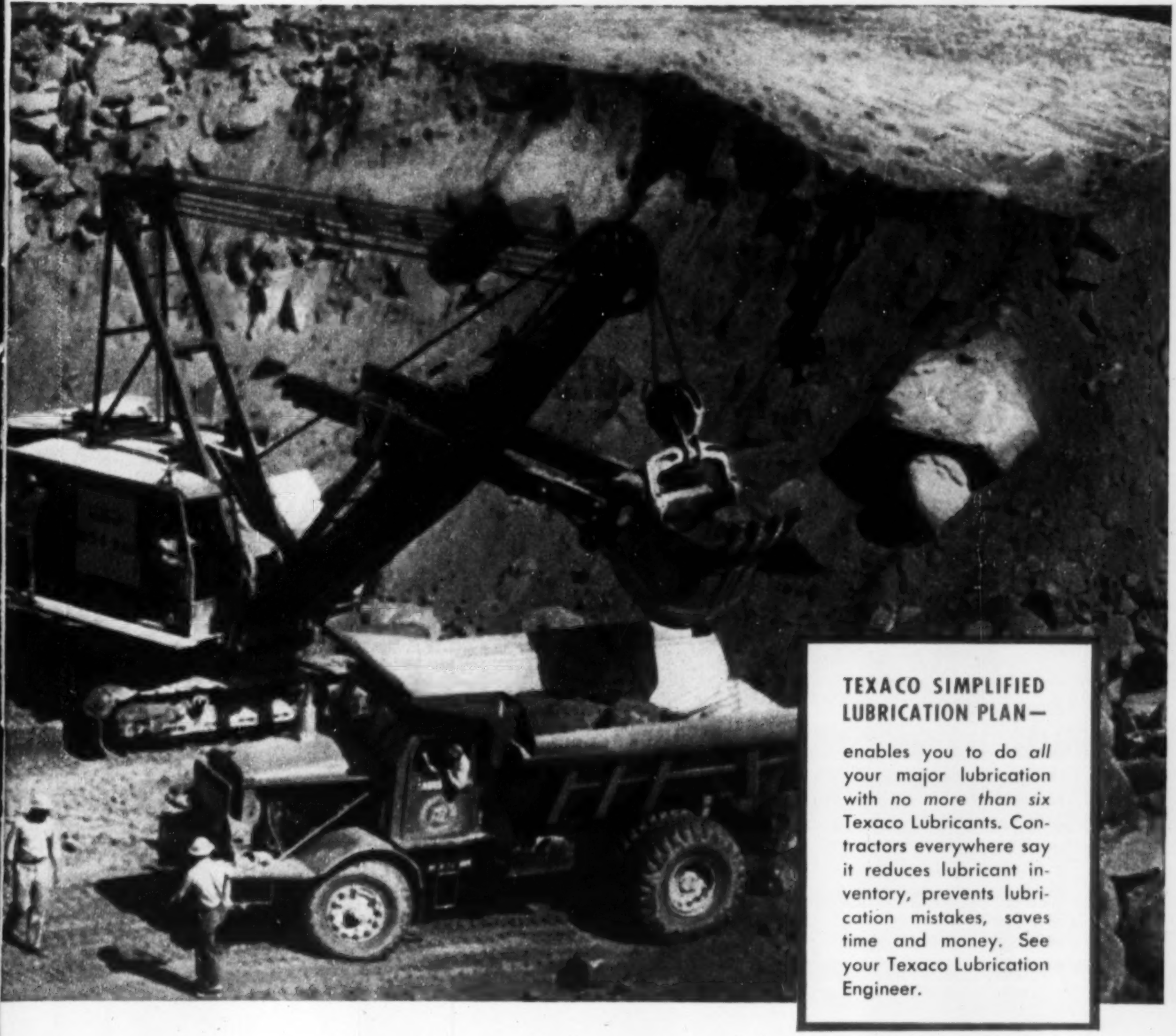

TEXACO SIMPLIFIED LUBRICATION PLAN—

enables you to do *all* your major lubrication with *no more than six* Texaco Lubricants. Contractors everywhere say it reduces lubricant inventory, prevents lubrication mistakes, saves time and money. See your Texaco Lubrication Engineer.

fuel used, the right member of the *Texaco Ursa Oil* series will keep it clean, prevent bearing corrosion and keep rings free for proper compression and combustion.

In hydraulic mechanisms, use *Texaco Regal Oil R & O*. It has *more than ten times the oxidation-resistance* of ordinary turbine-quality oils in this service, keeps systems free from rust, sludge and foam. To keep wire rope strong longer, use *Texaco Crater*. Also ideal for open gears.

Let a Texaco Lubrication Engineer help you simplify your lubrication, step up the efficiency of your equipment and bring down your costs. Just call the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write:

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FOR ALL CONTRACTORS' EQUIPMENT

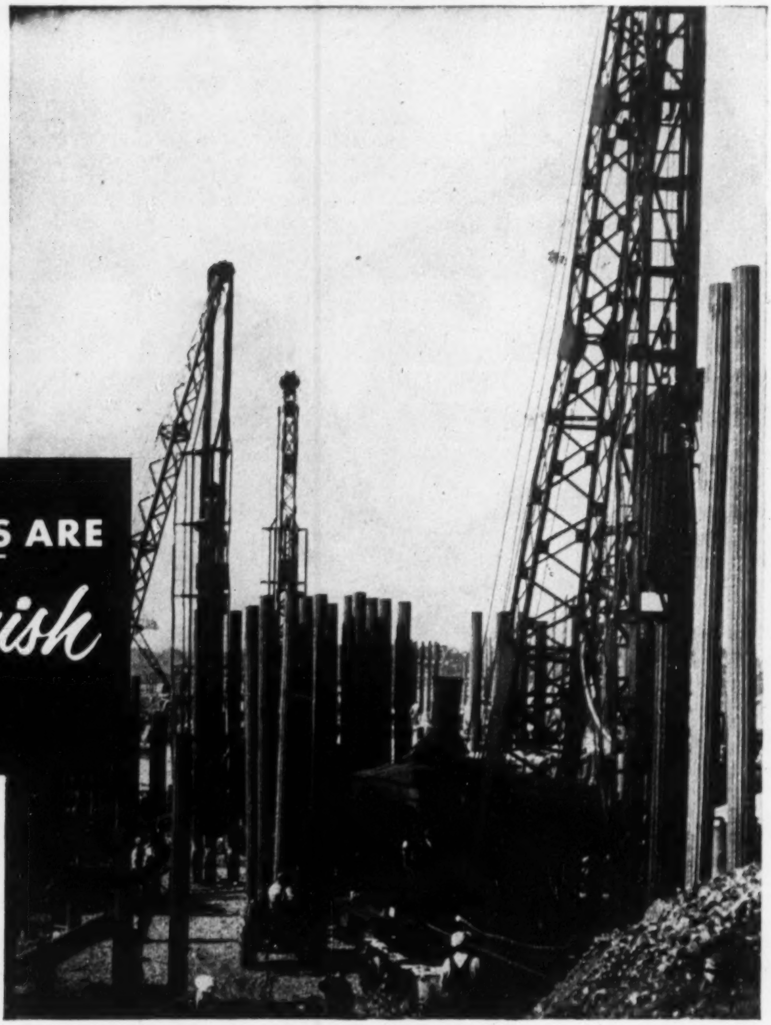


Photo example of tough driving condition met by high strength, cold-rolled Monotube piles.

WHY MONOTUBES ARE

Start-to-Finish

PILES

IN construction work, unanticipated soil conditions can often raise cain with costs, work schedules and foundation designs. That's when you really value the unmatched versatility of Monotube piles . . . for any job *started* with Monotubes can be *finished* with Monotubes.

For example . . . you have a choice of gauges, gauge combinations, tapers, diameters or lengths. Other factors bearing on easy job completion with Monotubes are: simplified weld-splicing in the field to almost any required length; cold-rolled construction for exceptional strength; and top-to-bottom visual inspection before concreting.

Why not get *all* the facts on how Monotube piles offer you an unusual margin of assurance, safety *and economy!* Write to The Union Metal Manufacturing Co., Canton 5, Ohio, for Catalog No. 81.

Monotube Foundation Piles

UNION METAL

Check 'Em!

ONLY ADAMS Motor Graders have all these time and money-saving advantages

8 Forward Speeds

✓ Provide the "right" speed for every operation and a higher travel speed. Save time—reduce costs.

4 Reverse Speeds

✓ Up to 13 mph. . . . Save valuable production time backing on short stretches, between forms, etc.

3 "Creeper" Speeds

✓ ¼ to 1 ¾ mph. (optional). Use full engine power while gearing grader to slow-speed operation.

Rubber-Mounted Engine

✓ Floating power—no engine vibration transmitted to grader. Increases operator efficiency.

Dual Braking System

✓ Service brake applies hydraulic braking action to transmission as well as wheels. Quicker, safer stops.

Foot Accelerator

✓ Permits operator to drive grader as naturally as truck or automobile. Safer handling in traffic.

New Heavy-Duty Constant-Mesh Transmission

✓ Easy, positive gear shifts at all speeds . . . Heavy construction with helical gears on roller bearings for quietness and long life. The finest ever put into a motor grader.

ASK YOUR ADAMS DEALER FOR AN ON-THE-JOB DEMONSTRATION

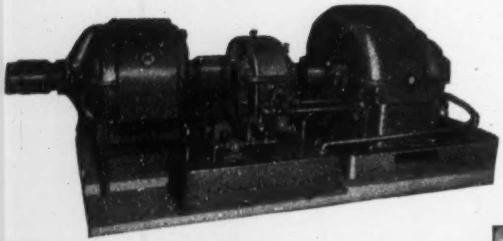
Make your next motor grader an **ADAMS**

Relieve SEWAGE

Demands on Sewage Facilities Become Acute with Population Growth

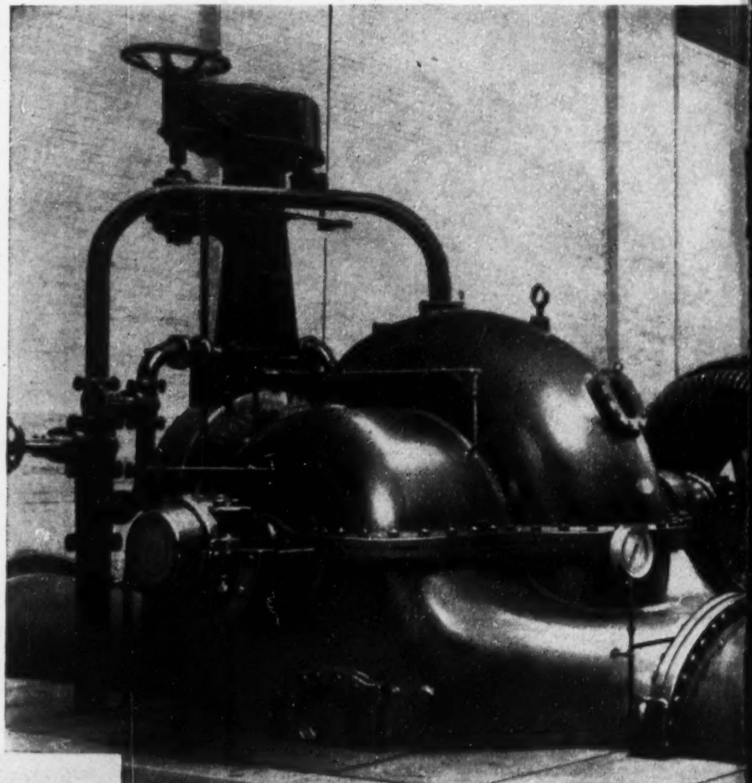
In every city the need for high efficiency, low maintenance sewage pumps is increasing as population grows. To meet this growing demand, Allis-Chalmers offers a wide range of sewage pumps engineered to the needs of municipalities.

The Allis-Chalmers line is complete . . . pumps range in size from small compact units producing few gallons per minute to huge units capable of pumping many thousand gallons per minute. To meet installation requirements, pumps are available in both horizontal and vertical design.



BLOWERS — MOTORS: Wide range of capacities and ratings for all sewage plant aeration. Simple blower design assures maximum efficiency for all operations. Cast casing provides rigid, smooth operation. Available for volumes up to 135,000 cfm.

MOTOR CONTROLS: Dependable start-stop control for all sewage processing apparatus, in both single and grouped units. Simplified installation requires only connection to leads for operation. Expandable design permits easy addition of more cubicles when required.



TYPE "S" SEWAGE PUMPS: Specially designed pumps engineered to individual requirements in wide range of capacities and heads. Extremely adaptable to large city sewage requirements. Can be furnished for either vertical or horizontal installation where needed.

Illustration shows seven large Type "S" Sewage Pumps installed in large midwest city sewage pumping station.

ALLIS-

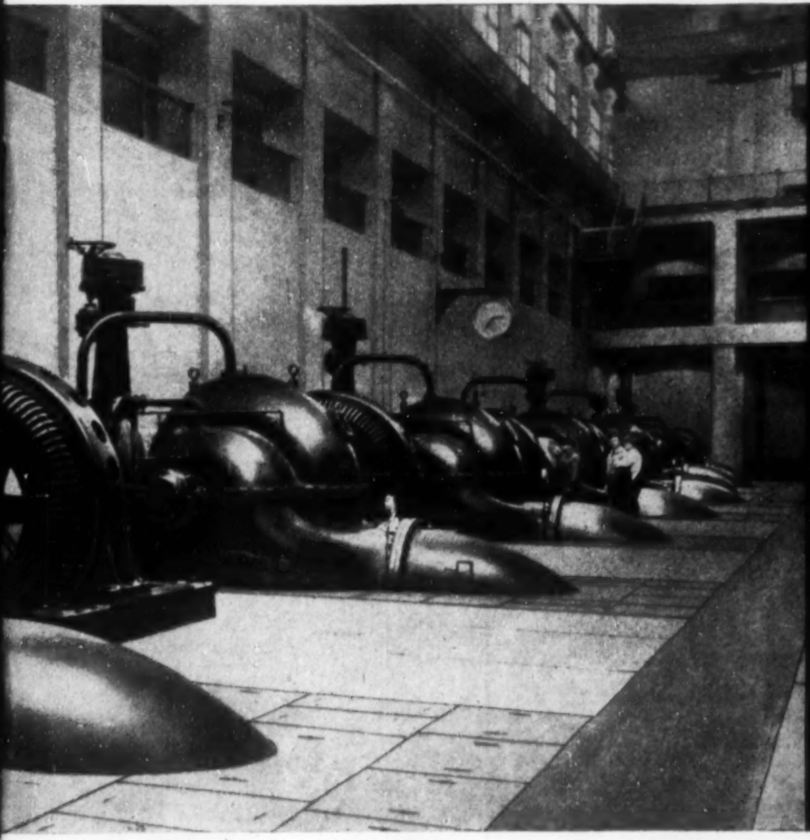
GROWING PAINS

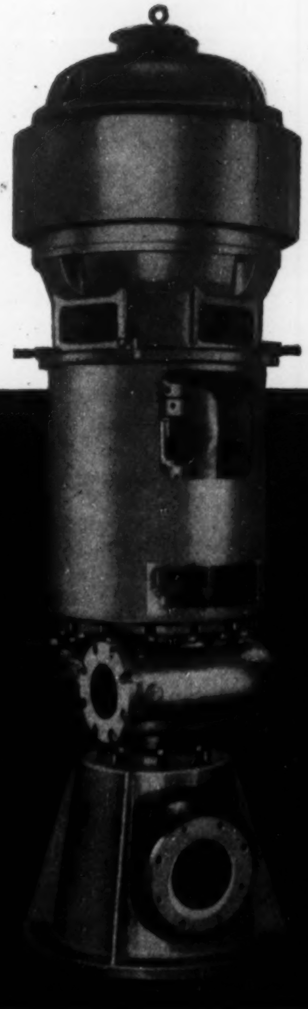
Backed by over 65 years of research, design, engineering and manufacturing experience, Allis-Chalmers sewage pumps give long, heavy duty service under every operating condition. Their sturdy design and low maintenance characteristics are the ultimate in modern sewage pump construction.

As the world's largest manufacturer of public works equipment, Allis-Chalmers also offers an extensive line of motors, blowers, motor controls and allied equipment for modern sewage plant operation.

Whether you are planning expansion or modernization of your present sewage facilities, you can profit from Allis-Chalmers long experience in this field. For complete information call your nearest A-C sales office or write Allis-Chalmers, Milwaukee 1, Wisconsin.

A-4259

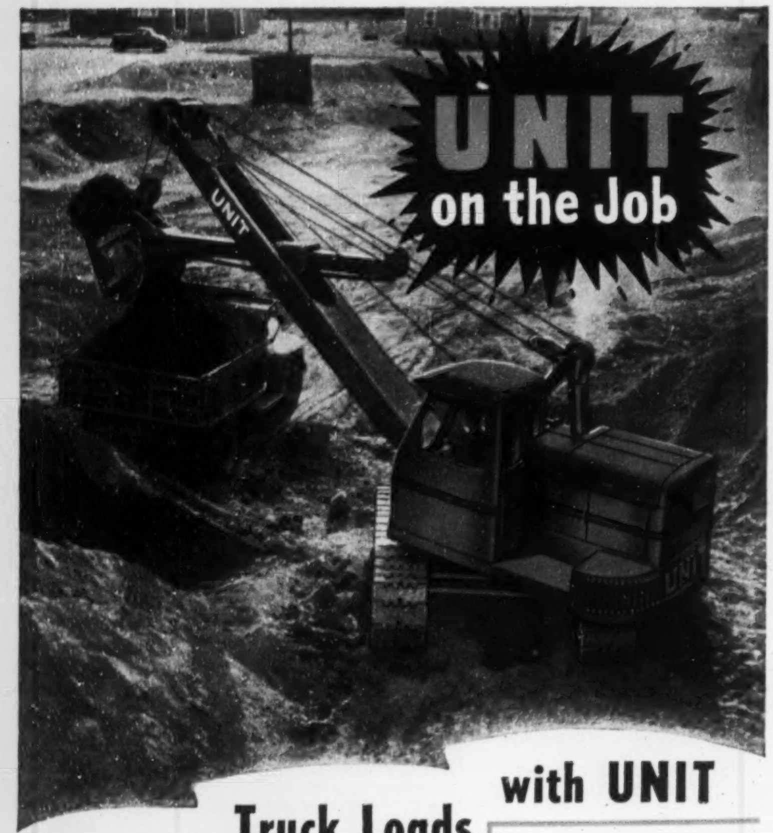




TYPE "SW" SEWAGE PUMPS: Single-stage, single suction type pump with volute casing design. Has non-clog impellers designed to pass maximum sphere sizes, rags, string and other materials for highest efficiency. Available in a wide range of capacities and heads. Adaptable to horizontal and vertical installation to meet requirements.

World's Largest Manufacturer of Public Works Equipment

CHALMERS



Step-up Truck Loads with UNIT

Here's a UNIT ¾ yard Shovel that's "in there swinging" . . . making big payloads. UNIT'S balanced stability and power permit hard digging . . . produce maximum yardage at low operating cost. Fewer working parts cut down replacements required . . . reduce maintenance costs. The FULL VISION CAB enables operator to see in ALL directions . . . promotes safety . . . increases efficiency. Results in more loads per day and easier load handling. Get the complete UNIT story. Write for literature.

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All Models Convertible to ALL Attachments!

SHOVEL
DRAG
CLAM
HOE
CRANE
MAGNET

READER COMMENT

Texas templet not new

SIR: In the April 29 issue of your magazine, I read with interest the article, "Building a causeway to new play island," which featured cantilever jig for precise piledriving.

In 1948 we built the Santa Rosa Sound Bridge near Pensacola, Florida, which was concrete piling, 18 in. square, 40 ft to 70 ft long, and in four pile bents with the outer piles battered. Because the pile bent design is similar, it was very surprising to note that a templet similar to ours was used on the Texas causeway bridge.

Our piledriving subcontractor, Powell Brothers of Fort Lauderdale, Florida, used a cantilever templet supported by the plumb piles on the two previously driven bents. Our pile guide was wider because of several seven-pile bents in the bridge. Pile setting in the templet was facilitated by the use of pipe rollers in the guides. The templet was very satisfactory and Powell Brothers placed and drove 26,000 ft of concrete piling in 116 calendar days, or an average of one pile bent per working day.

Although there may be firms which have made more rapid progress than we did, we feel that we set a very enviable rate of progress on this job. The first piles were driven on July 15, 1948. The first pile cap was poured on Aug. 18, 1948. The first of 104 33-ft concrete roadway spans was poured on Oct. 8, 1948, and the bridge was opened to traffic June 10, 1949. Also included in the bridge was a 115-ft double-leaf bascule section.

GEORGE W. HELLER
Johnson, Drake & Piper, Inc.,
Minneapolis, Minn.

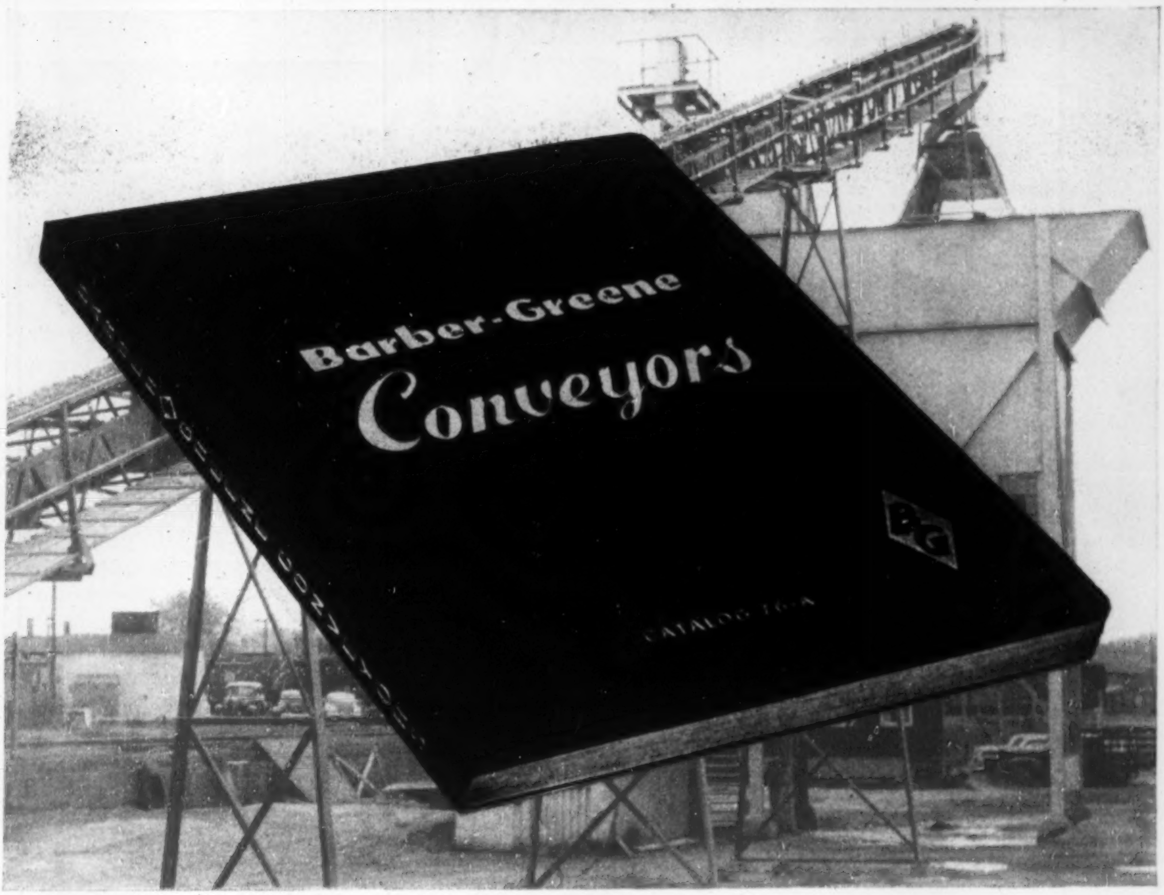
Not scared

SIR: Your item entitled, "Factory Land Goes Begging as Pollution Scares Buyers" (ENR, April 8, p 54) has brought some mild repercussions.

From the article, I regret to say, readers may infer that I am so ill-informed as to assume that the water requirements for rayon manufacture are not exacting. Actually, I know of only one instance in which a rayon plant considered locating on a strongly alkaline stream and that was the case in which the effluent would be so strongly acid as to be susceptible of discharge into the alkaline stream and depending on that as a natural source of neutralization.

We are making a great deal of prog-

(*Continued on page 14*)



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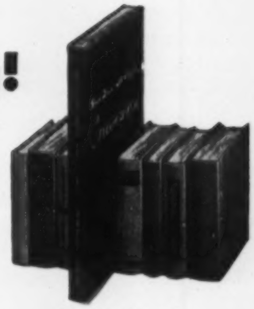
Here's the Most Complete, Comprehensive, Easy-to-Use Conveyor Catalog Ever Published!

Clearly presented in this 192-page book is the broad selection of standardized drives, take-ups, truss, idlers, belting . . . all the components and accessories required to fit your requirements. There are more than 60 pages of typical conveyor layouts and installation photographs. Also included is a section on shuttle conveyors, stackers, feeders and portables.

This catalog clearly and factually demonstrates the savings in design, delivery time, erection and operating costs that Barber-Greene standardization makes possible. Once you use it, you'll have a new conception of the economy, utility and simplicity of Barber-Greene Standardized Conveyors.



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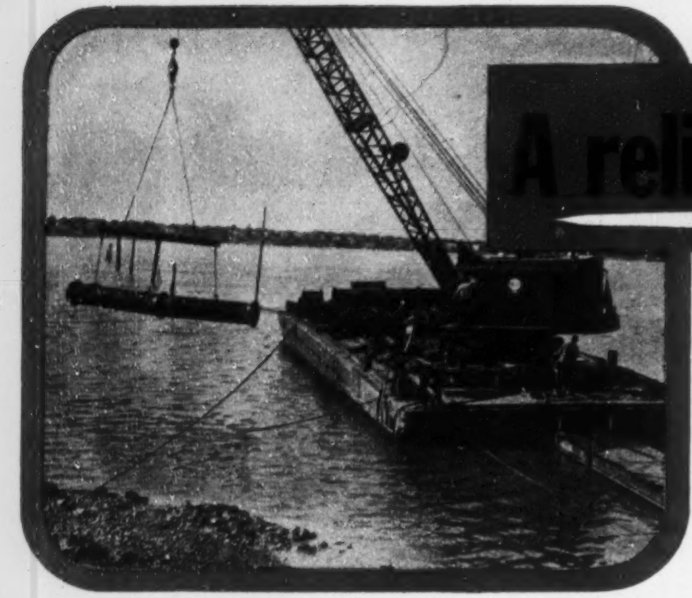
If you handle bulk materials, you'll want this new catalog. Please request Catalog 76-A on your company letterhead.

53-20A-PE

Barber-Greene BG

Aurora, Illinois, U. S. A.

A reliable material



Installing 30-inch cast iron mechanical joint pipe for outfall sewer at East Providence, R. I.

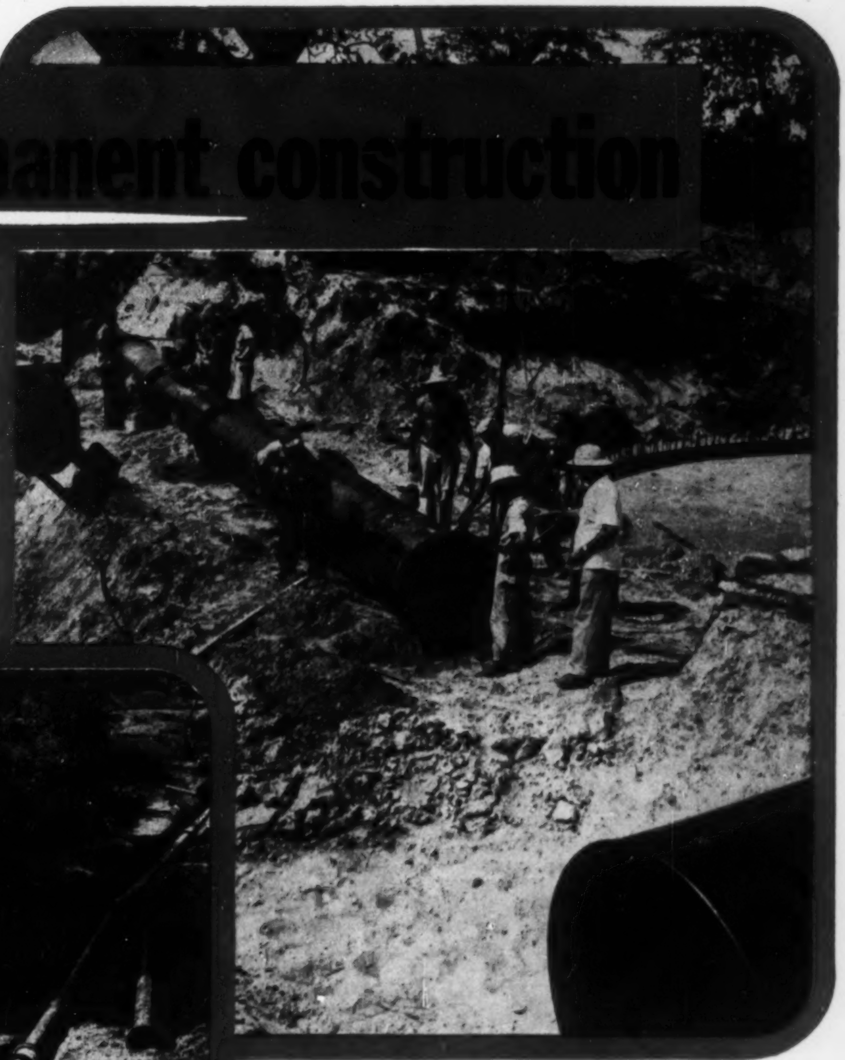
Where installations are planned for long-term service to assure low cost per service year, engineers rely on cast iron pipe as a dependable and adaptable material. Consequently, it is specified for a wide variety of applications, both utility and industrial, including water supply, gas, sewerage, fire protection, power plants, oil refineries, process industries and many forms of special construction. Long life and low maintenance cost are *proved* results of the high beam-strength, compressive-strength, shock-strength and effective resistance to corrosion of cast iron pipe. For information write: Cast Iron Pipe Research Association, Thos. F. Wolfe, Managing Director, 122 So. Michigan Ave., Chicago 3, Ill.

(above)
Laying 16-inch cast iron pipe alongside railroad tracks at Ft. Lauderdale, Florida.

(at right)
Cast iron pipe being installed for large process industry plant in Chicago.

CAST IRON PIPE

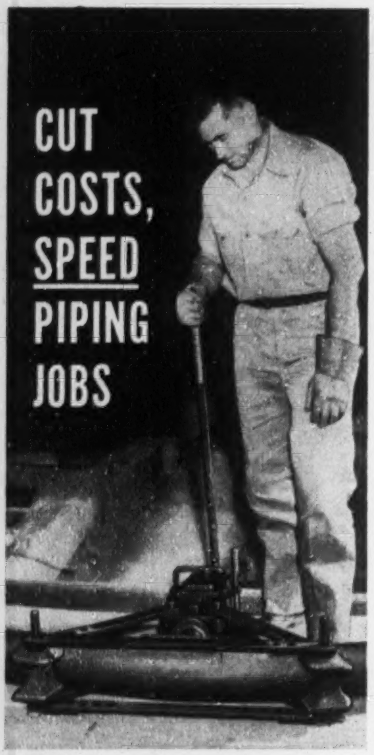
for permanent construction



(above)
Installing 30-inch cast iron pipe for sewage treatment plant at Panama City, Florida.

(at left)
Eight-inch mechanical joint cast iron pipe installed under difficult conditions to carry coal mine water at Sumiton, Ala.

SERVES FOR CENTURIES...



...with Greenlee Hydraulic Pipe and Conduit Bender

Built for the tough jobs, the GREENLEE Bender saves hours, reduces costs on your pipe and conduit work. With a GREENLEE *one man* quickly makes bends in pipe up to 5", rigid and thin-wall conduit *right on the job*, exactly where and when needed. Many owners report time and labor savings of 50% or more . . . and the cost of many manufactured bends and fittings is entirely eliminated. Compact, portable, versatile to reduce your costs, eliminate construction delays, keep jobs rapidly moving along on schedule. Available in two sizes. Thousands in use by construction crews, electricians and plant maintenance departments. Often pays for itself on the very first job!

FREE BENDER BOOKLET with complete data and illustrations on GREENLEE line of hand and hydraulic benders for tubing, pipe and conduit. Shows how to do various bending jobs quickly and easily to cut job time, reduce costs.

GREENLEE

GREENLEE TOOL CO.
2225 Columbia Ave., Rockford, Illinois

ress in cleaning up the pollution, whether organic or chemical, which occurs within this state. We are working toward interstate agreement on pollution control on interstate streams.

There are many good sites in this state for new industries, including those needing vast quantities of water, and surface water resources of this state are getting better and are being brought more completely under control all of the time.

HAROLD V. MILLER
Executive Director
Tennessee State Planning Commission

Wrong comparison

SIR: In the June 18, 1953 issue of ENGINEERING NEWS-RECORD, you published an article on pages 54 through 58 under the heading: "Third Longest Vehicular Tunnel To Be Completed in Japan in 1956."

I am deeply thankful for your introducing our project to your readers.

However, I must point out a few mistakes in the article. First, you stated the record vehicular tunnel is the 2.8-mi-long Broadway Tunnel, Oakland, Calif., but, as far as I know, the vehicular tunnel is 2,910 ft in length and shorter than our tunnel. Therefore, the title should have been "Second Longest" instead of "Third Longest."

Second, the photograph on page 57 "FIXED EXTERIOR FORM" is not right. The picture shows a temporary stage for illumination experiments.

Third, the article says on page 58 that exterior forms for the most part are left in position. But we don't use exterior forms. I suppose that the temporary metal sheets were mistaken for exterior forms.

SHIRO IBUKIYAMA
Chief, Planning Section
Kammon Vehicular Tunnel
Construction Office
Kyudannoura-Machi,
Shimonosekishi, Yamaguchi-Ken,
Japan.

Opinions of young engineers

SIR: Congratulations are extended to ENR for its recent attention to the subject of bidding for engineering services and unions. I look forward to your keeping both in the news. Out of such stimulation should come action needed to strengthen the engineering profession.

I was particularly interested in Mr. King Royer's comment on the subject of bidding for engineering services in the April 1 issue. Aside from his purpose to support bidding he has further expressed the discontentment of the young engineers. The engineering profession must think back to its graduates of four to five years ago and recall that the bulk are World War II vets. These men whose age and experience of life were far beyond the usual college graduates. Many were aware of the economic responsibilities of a family man during their college days. It is difficult for such men to interest themselves in the ideals of professionalism ahead of the needs and luxuries they desire for their family.

Such a quorum of young men who are far from squeamish about voicing its opinions can and will sway the thinking of the engineering profession in the future. The elders of the profession who strive wishing to maintain the status quo can best direct their attention toward the more realistic things of life rather than lofty ideals.

Like Mr. Royer, I too, am one of the many young engineers who have directed my efforts toward a field I feel has more opportunity. I am now near doubling my salary over what it was two years ago as an engineer. My present position being in management, over construction and material sales. My engineering education and experience without doubt provided me with the background to hold my present job. The civil engineer with a talent for organization and administration is a fine source of construction management. The construction industry and the young engineer are both realizing and taking advantage of this.

I am sincerely interested in the ideals of the engineering profession, having strived and received my registration as a professional engineer. However, like so many I feel an obligation to my family and myself to follow a career that presents the most benefits.

ROBERT PATTEN
General Manager
Wallis Supply Company
Gainesville, Ga.

CALENDAR

American Water Works Assn., annual conference, Seattle, Wash., May 23-28.

Building Research Institute, National Academy of Sciences—National Research Council, Hotel Hershey, Hershey, Pa., May 24-5.

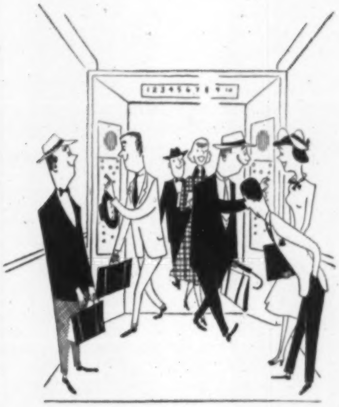
California Society of Professional Engineers, convention and trade show, Hotel Mark Hopkins, San Francisco, May 27-29.

Column Research Council, Engineering Societies Building, New York, May 27-28.

National Society of Professional Engineers, Schroeder Hotel, Milwaukee, Wis., June 9-12.

National Association of County Officials, highway exposition, Omaha, Neb., June 9-12.

American Society for Engineering Education, University of Illinois, Urbana, June 14-18.



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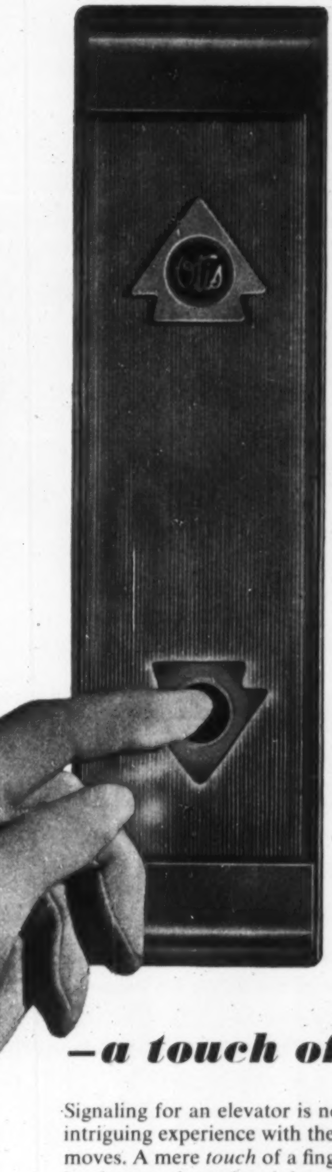

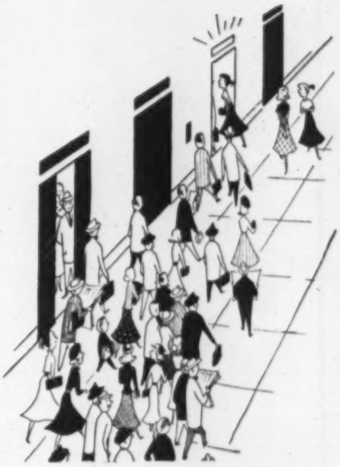

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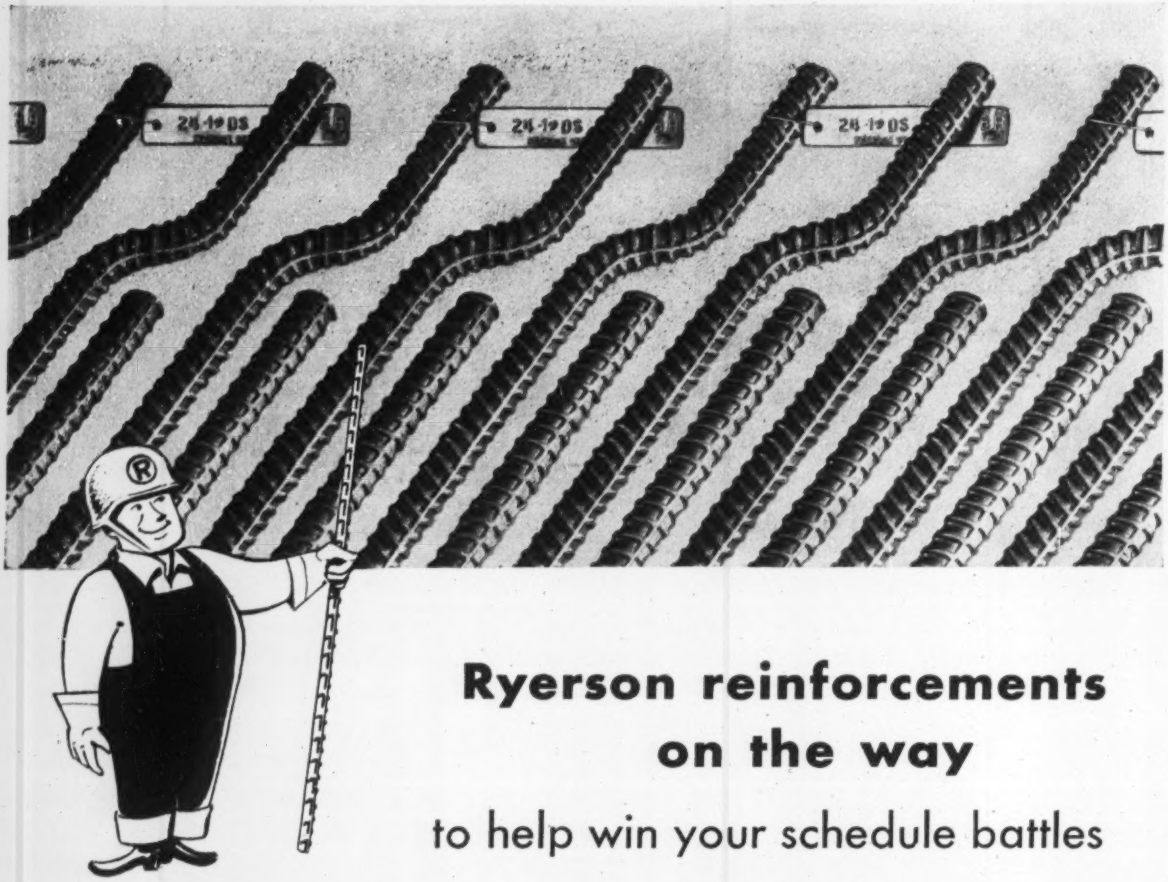

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MAY 20, 1954

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THE CONSTRUCTION WEEK

MORE FLUORIDATION—One result of congressional hearings on the Public Health Service's request for funds could be a government-backed campaign for additional fluoridation of municipal water supplies.

John W. Knutson, Assistant Surgeon General (and chief dental officer) of USPHS, told senators that studies of areas where fluoridation of water is the practice show that children born after inauguration of the program have 65% fewer decayed teeth than those born earlier.

But, commented Dr. Knutson, the program has "generated very intense opposition," from several quarters in some areas.

Senators suggested that USPHS explore possibilities of a campaign to get more than the present 940 communities (population 17,500,000) to adopt fluoridation.

THRUWAY DOES ITS OWN—Armed with new powers to handle their own maintenance, New York State Thruway Authority officials are planning to spend up to $1.5 million a year on maintenance work alone.

Originally, maintenance on the 420-mi road was to be handled by the State Public Works Department—but the 1954 legislature authorized the Thruway to do its own work.

POLLUTION DEVELOPMENTS—Two things have happened on the question of pollution control—both of which ultimately can mean money spent for construction:

1. The Missouri Basin Inter-Agency Committee, meeting at North Platte, Neb., voted to broaden objectives of the Missouri Basin development scheme to include stream pollution control;

2. The U. S. Chamber of Commerce recommended to the Senate Finance Committee that tax laws be amended to permit firms to write off cost of pollution control works over a five-year period.

ENGINEER BAIT—Albany, N. Y., city fathers thought they had the right remedy for a shortage of professional help in the city engineer's office.

They raised salaries from city engineer down by an average of $1,000 a year (top pay $7,600 under the new scale).

WHOSE WATER SHORTAGE?—The U. S. Geological Survey very carefully isn't taking sides—but a news release by the parent Department of Interior is titled "Water Shortage in 1953—Nature's Failure or Man's?" and it implies that man isn't blameless, since "most water shortages were caused by municipalities outgrowing their water supply systems."

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122-Ton Roadway Slabs Floated into Place with Assembly-line Precision on Bay St. Louis Bridge, Mississippi

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Work on the $6.5-million structure, proceeding from both shores to mid-way juncture, was completed 18 months after driving first pile.

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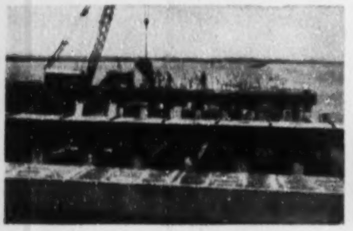
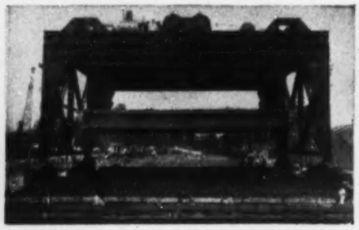
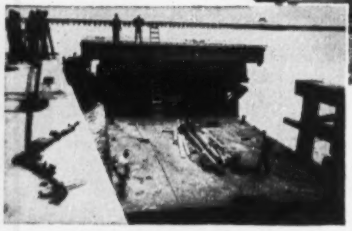
Designed by: **HAZELET & ERDAL,** Consulting Engineers, Louisville, Ky.
General Contractor: **MERRITT-CHAPMAN & SCOTT CORPORATION,** New York







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WASHINGTON OBSERVER

Military are getting almost all of the $1-billion military construction authorizations they asked for this year. The big bill will come out of the House Armed Services Committee almost intact. Examples of items dropped: Elk Hills, Calif., pipeline, and a small ammunition depot at Fallbrook, Calif. Two big new projects are being added to the bill: a $350-million item for the construction of about 25,000 family housing units for military posts, mainly overseas; and a $73.5-million addition to the Arnold Engineering Development Center, Air Force research base at Tullahoma, Tenn.

•

Army also will be asking Congress for more Nike money. The request is expected to be for $50 million to $100 million to complete its plans for the antiaircraft missiles around cities across the northern border of the U. S. This is in addition to $75 million already committed.

•

The housing bill goes under the Senate committee knife this week—and many drastic changes are going to be made. But there's no disposition to hack the bill to pieces as the way to answer the conditions revealed by the housing investigations.

Most likely to fall is the 40-year, no-down-payment program for low-cost housing. This program was designed to assist where housing is needed as a result of slum clearance or other federal programs. But there had been resistance to such terms all along, and it's not likely to survive the Senate committee's action.

•

Home improvement loans stand a good chance of staying in the law but it won't be as liberal an insurance program as the present law provides. Lenders won't be able to insure so many kinds of "improvements"—and they'll have to take more risk themselves.

Proposal to make credit terms easier may be dropped. The President proposed to make five-year, $3,000 loans the maximum, compared with present law's three-year, $2,500 limit. Abuses under the existing law may endanger the expanded credit, despite the Administration's hopes for home improvement as a big boost to the building market. Legislators have been talking tough about how guaranteed loans are not really needed. But if Republican leaders decide to approve the program, it'll go through; Democrats will go along.

•

Increased federal aid for rehabilitating existing homes may be dropped. This is another section that would be easy for Congress to drop with no real hardship to either the industry or the home owner.

Renewed pressure will be put behind the public housing program—now that it seems clear that the government-insurance program will be considerably less than what Eisenhower asked. Democrats are moving in to talk up 35,000 public housing starts for next year.

•

It seems obvious, though, that so far the furor hasn't dampened business. Government figures indicate that housing may be off to one of its biggest years. Private surveys show no slowdown in loan applications, and the Veterans Administration has just reported that it received 72,990 requests for appraisals, an increase of 76% over April of a year ago.

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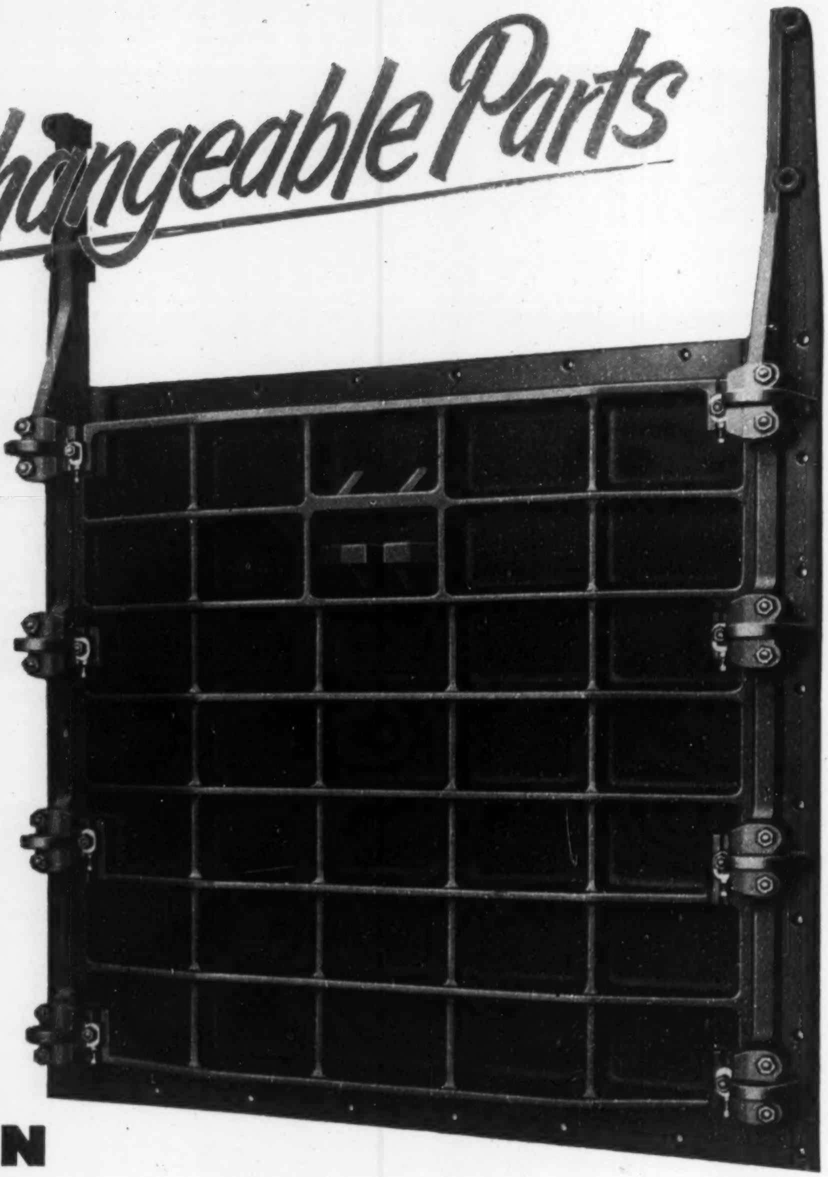

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7 engineering firms bid on S.C. projects

ASCE fails to discourage S.C. practice but forces a reversal in Nebraska

Seven firms last week bid for the design work on six South Carolina bridge projects, as the state highway department continued its controversial practice of seeking bids for engineering services in defiance of objections by the American Society of Civil Engineers.

But, meanwhile, the ASCE had chalked up a victory for its position in connection with a proposed by-pass highway at Omaha, Neb. There, a group of professional engineers succeeded in persuading a county board to return un-opened two bids that had been received for engineering services.

• Competition keen on S. C. job—The South Carolina Highway Department opened bids on six bridge jobs having an estimated total cost of $3.5 million. Bids were based on a percentage of the estimated construction cost of the projects.

One set of bids was for five bridges to be built in Charleston County. Bidders and their offers were: V. Barstow, New York, 1.40%; Dotterer Engineering Co., Charleston, S. C., 1.60%; Riley & Ross, Miami, 1.94%; Varo Engineers, Columbus, Ohio, 2.20%; Reliance Contracting Co., Pittsburgh, 2.63%; Samuel J. Caulfield, Arlington, Va., and Baker-Wibberley, Hagerstown, Md., 3%; and Patchen & Zimmerman, Augusta, Ga., 3%.

For a single bridge in Beaufort County, the bids were: V. Barstow, 1.90%; Riley & Ross, 2.24%; Patchen & Zimmerman, 2.40%; Reliance 2.63%; Caulfield and Baker-Wibberley, 2.80% and Dotterer 3.20%.

Low bid on a bridge design contract let last October to Reynolds, Smith & Hills of Jacksonville, Fla., was for 2.80% of construction cost, while Caulfield of Arlington, Va., bid high at 7.25%. This was the job that touched off the explosive controversy over bidding for engineering services and led the ASCE to bring charges of unethical conduct against the engineers who had participated in the bidding.

• An about face in Omaha—The Douglas County Board at Omaha had asked for bids for engineering services in connection with paving a by-pass highway around Omaha, using the Mormon bridge across the Missouri River at the city's northern limits. This was the second time the board had sought bids on a paving job. It recently received bids on a project for improving South 72nd St.

The board's second attempt to seek bids met with strong opposition from a group of professional engineers in Omaha, speaking for the ASCE position—and speaking from experience. Spokesman for the group was S. A. Michael of Kirkham, Michael & Associates who told the board that the local professional ethics committee "raked us over the coals" for submitting bids on the 72nd St. project. His firm got the contract in competition with three other bidders.

He emphasized the ASCE contention that "bidding on professional services is not in the public interest." Then, he went on to argue that if engineers are required to bid for work, they will have to "cut corners" to get jobs. Should this happen, Michael continued, "the public suffers."

The county board, after returning the two bids received on the by-pass project, named a three-member committee to recommend an engineering firm for the proposed work.

Segregation ruling

South's school building boom may be slowed by Supreme Court decision

The Supreme Court, when it said segregation in public schools is unconstitutional, threw some doubt over hundreds of millions of potential school construction in the 17 states where racial segregation is required by law. However, ENR found, in checking with authorities in several key southern states, that current building programs aren't likely to be cut back.

In the last few years, many southern states have undertaken extensive school construction programs under the pressure of earlier court decisions which clearly showed that—sooner or later—they would have to provide equal facilities for colored students. The Supreme Court in a series of decisions had shown that equal educational facilities were mandatory under the Constitution.

As a result of this trend of decisions from the high court and economic and

(*Continued on page 22*)

White House spurs action on big dams

All-federal, partnership water resources projects move ahead in Congress

The Admnistration was pushing hard this week to get a number of major water resources development projects through the legislative mill. Some would be financed entirely by the federal government; others would involve local government or private utility participation.

Crucial vote on the biggest of the Administration-backed new starts—the $923-million Upper Colorado scheme—was due to come up in the House Interior Committee this week. It had cleared subcommittee but opposition of the whole committee has strengthened, and its fate probably hangs on a one-vote margin—either way.

Whether that mammoth project finally will get through Congress this session is doubtful. But the Administration is committed to it, and will keep pressure on, as it did so successfully on the St. Lawrence Seaway.

• Political ammunition—As the political season for the 1954 congressional elections gets closer, Administration spokesmen have begun to focus attention on GOP efforts to promote water projects in the West. Last week Interior Secretary Douglas McKay, in a series of Oregon speeches, stressed the promising outlook for federal-local partnership projects—a new device on which the Administration is pinning big hopes—as well as on projects with full federal financing.

McKay put the Administration seal of approval on the $320-million John Day project on the Columbia River as an example of the partnership idea. Legislation authorizing the dam, to be jointly financed by the federal government and private interests headed by Portland General Electric Co., is about ready for consideration by Congress.

The Secretary cited, as an example of Administration interest in federal projects, the efforts to revive the $236-million Libby Dam proposal of the Army Engineers. This project on the Kootenai River in Montana has been authorized but still requires International Joint Commission approval.

• Partnership projects—The House

(*Continued on page 22*)

. . . Action on big dams

Public Works Committee already has approved local participation in the $360-million Priest Rapids project on the Columbia River and the $34-million Cougar Dam in Oregon (ENR May 13, p. 23).

The Pacific Power and Light Co. has offered to pay for the power facilities of another Army Engineer project, the $58-million Green Peter development in Oregon.

Likewise Secretary McKay has given Administration blessing to legislation that would authorize federal loan and grant funds for two California irrigation districts that would build the $48-million tri-dam project—three structures on the Stanislaus River.

Also up before Congress is a Senate-approved bill to authorize the Grand River Dam Authority of Oklahoma to build the $38-million Markham Ferry project with $6.5 million in federal funds for the flood control features.

Coming up before the House Public Works Committee this week was another bill which would permit private development of the Coosa River in Alabama with construction of a series of five dams.

Among direct federal projects backed by the Administration the $175-million Fryingpan-Arkansas trans-mountain diversion and east-slope storage scheme in Colorado made important progress this week. Already reported to the Senate by that body's Interior Committee, the Fryingpan-Arkansas authorizing legislation received a favorable vote at the beginning of the week on the House side in the Reclamation Subcommittee. That action indicated an early report to the House by the full Interior Committee, with possible enactment by Congress at this session.

. . . Segregation ruling

social changes in the South itself, 13 southern states had spent eight times as much money on school construction in 1951-1952 as in 1939-1940. A larger share than ever before went into Negro schools.

Now the Supreme Court has thrown another factor into the situation, the effect of which is to put the next move up to the states themselves. Even though schools are physically equal, said the court, segregation is unconstitutional.

• Further action in fall—Chief Justice Earl Warren, who wrote both of the court's unanimous decisions in the five school segregation cases decided this week, declared that the Constitution forbids both the states and the federal government from maintaining racially segregated public schools.

However clear and decisive the language, though, a major problem still has to be met. That is: What is to be done—and how—to see that integration of the races in public schools is achieved? Thus the problem of what happens to the various construction programs is at least a year away from solution, and in some states could drag on for several more years to come.

This is at the bottom of the request by the Supreme Court for more arguments next fall. Until then, of course, there is bound to be a great deal of public discussion, new plans may be made or old ones changed in light of the decision this week. And there will be much soul-searching among officials in the 17 states which now have laws or state constitutions which require racial segregation in public schools—laws which are now unconstitutional. There are also four states which have laws permitting school segregation. on local option.

(The seventeen are: Alabama, Arkansas, Delaware, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, Missouri, North Carolina, Oklahoma, South Carolina, Tennessee, Virginia and West Virginia. The four are: Arizona, Kansas, Wyoming and New Mexico.)

• Next steps in doubt—The questions state officials from these 21 states and the Attorney General of the United States will be trying to answer are these:

• Should the Supreme Court order that Negroes be admitted immediately to schools of their choice—within the limits set by normal geographic school districting; or should the Supreme Court permit a "gradual adjustment"?

• Should the Supreme Court write detailed orders in each case and if so, what issues should be covered; should the court appoint a special master to take evidence for the purpose of framing such orders; or should the Supreme Court remand the cases to lower federal courts to work out decrees, and if so, what procedures should be followed in working out such decrees?

The segregation cases arose in four states—South Carolina, Virginia, Delaware and Kansas—and the District of Columbia. State officials in South Carolina and Virginia, like most other southern states, defended their segregated schools on the "separate but equal" principal, and pointed to determined efforts to equalize Negro school facilities by tremendous new school construction programs.

• No immediate cutback seen—Gov. Herman E. Talmadge of Georgia declared in Atlanta that the Supreme Court's decision would not affect Georgia's school building program. The Governor said that, regardless of further action taken by the state, the schools were vitally needed and would be built. Georgia's school building program now totals approximately $200 million, calling for 1,036 public grammar and high schools throughout the state. To date, contracts for about 600 of these have been let.

Georgia's General Assembly has already drawn up an amendment to the state constitution which would turn public schools into private ones and give every school student, white or colored, the tuition to attend the so-called private school. In that way, segregation could continue with certain schools refusing to admit non-white students.

There is a possibility that the state could reorganize the school zones according to the color of the neighborhood. That way, the state could continue the school system on a part-public, part-private basis. Where such rezoning was impossible, the school would be made "private."

• Little effect foreseen—Mississippi has $50 million budgeted for school construction this year—the bulk of it intended to provide equalizing facilities for Negro pupils. A special session of the legislature is expected to be called to reexamine the program in the light of the decision. The legislators had prolonged their regular session until two weeks ago in expectation of the ruling.

The ruling apparently will have little effect on South Carolina's school building programs in the near future. L. P. Hollis of Greenville, chairman of State Education Finance Commission, said he does not feel the decision "materially" effects the state school building program. State Representatives Charlie V. Verner, of Greenville County, chairman of the Ways and Means Committee of the South Carolina House of Representatives, said he plans to consult with school and legislative leaders before making a definite statement, but he pointed out that school appropriations have been made for the coming year and that his committee will not be directly affected at once. There is no set annual figure earmarked for school construction in the state, but South Carolina has spent more than $90 million on schools since a school equilization program was launched three years ago.

Harold W. Richardson dies

Harold W. Richardson, 53, editor of Construction Methods and Equipment and a former member of the editorial staff of this journal, died suddenly on May 12 at his home in New Providence, N. J.

Harold Richardson's contact with news reporting began early in life. Forced to support himself while going through high school and college, he worked in the mechanical department of the Ft. Morgan (Colo.) Times and the Boulder (Colo.) Camera, where he learned to set type. Later, while in college, he served on the editorial staff of the Colorado Engineer, a publication of the College of Engineering of the University of Colorado, from which school Mr. Richardson graduated in 1923 as a civil engineer.

The five years following graduation were spent with the Bates & Rogers Construction Corp. of Chicago, first as a field engineer, then as assistant superintendent and finally as superintendent on construction contracts at places as widely separated as Clarkeville, Miss., and Jamestown, N. Y.

• Joined ENR staff—In April 1928, Harold Richardson joined the editorial staff of ENGINEERING NEWS-RECORD as an assistant editor specializing in heavy construction. In this assignment he worked under the direction of the late C. S. Hill, ENR's veteran authority on construction and general contracting, and traveled extensively to get first-hand information on major construction operations for ENR.

In 1940 Mr. Richardson was named Western Editor of ENR and transferred to the Chicago office. He already had spent much time in the West gathering information for such articles as his series on the construction of Fort Peck Dam, the largest earth dam in the world.

It was during his tour of duty as Western Editor of ENR that "Rich" made some of his major contributions to engineering journalism, notably his series of articles on construction of the Alcan Highway (1942-43), his reports on military construction in Alaska, the Aleutian Islands, Guam, the Philippines and Okinawa (1943-45), and his reports on the structural damage done in the atom-bomb attack on Nagasaki in Japan, where, in his capacity as a war correspondent, he went in with the first contingent to reach that city.

With Waldo G. Bowman, N. A. Bowers, Edward J. Cleary and Archie N. Carter, the four other editors of ENR who served as war correspondents, Harold Richardson wrote "Bulldozers Come First, the Story of U. S. Construction in Foreign Lands." Previously, he was associated with Robert S. Mayo in writing "Practical Tunnel Driving."

In January 1946, he was named Executive Editor of Construction Methods and three years later was appointed Chief Editor.

During World War II Mr. Richardson served as consultant, Construction Equipment Division, WPB. Other outside activities included a term as vice-president of the Construction Industry Manufacturers Assn., as a consultant to Construction Machinery Division, NPA (1951-52), and as general chairman, Construction Section, National Safety Council.

Prestress lessons

U. S. practice has points Europe could profit by

What could Europe most advantageously adopt from U. S. prestressed concrete practice today?

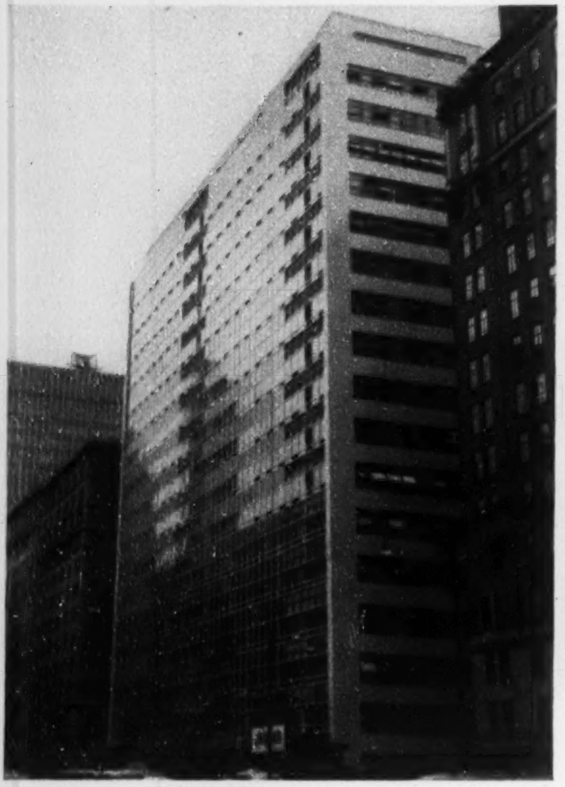
P. W. Abeles, consulting engineer of London, England, after an extensive lecture tour through the U. S. suggests ½ in. dia steel strands for pre-tensioning when prestressing structural members, and the application of expanded shale aggregate for concrete.

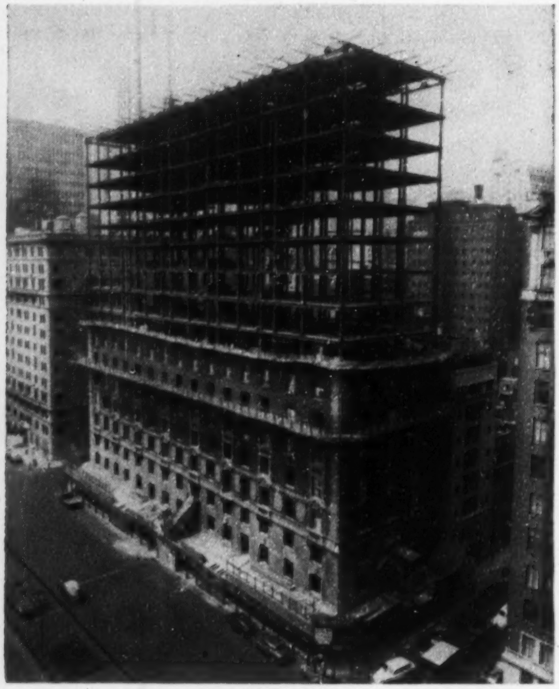
Abeles favors expanded shale aggregate in concrete because it offers high strength with light weight. Obviously, increased shrinkage and creep, and lower modulus of elasticity would have to be taken into account. The latter would be suitable for structures in which deformation is desirable to absorb shock, such as pile fenders.

As for the size of pre-tensioning strands, Abeles pointed out that the trend in England as in the U. S. leads to larger sizes. Instead of piano wire, 0.2 in. wire has so far been used mainly, and the use of 0.276 in. wire is envisaged. However, smooth wire of larger diameter hardly can be used for pre-tensioning and consequently strands of larger size are preferable.

• Inefficient pre-tensioning operations—From his observations here in the U. S., Abeles noted that American pre-tensioning plants in general are inefficient. He believes the root of the trouble lies in the fact that there is usually only one long casting line, or in some works a few semi-long lines. This does not allow mechanization and mass production. Abeles points out that in most European casting sites many pre-tensioning lines are laid out side by side in the precasting yard, and skilled workers are kept busy. If an industrial engineer had planned the pre-tensioning yards, primitive solutions with high labor cost would have been avoided.

Abeles voiced comment similar to that of Magnel (ENR Feb. 25, p. 23) in referring to the prevailing U. S. practice of placing "high"-slump concrete rather than "low"-slump or "no"-slump concrete, but pointed out that he saw "low" and "no"-slump concrete satisfactorily manufactured, where concrete blocks were made or pipes cast. Obviously, where "high"-slump concrete is used, as is generally the case in U. S., one would have to wait much longer until the specified strength is reached than with a "low"-slump concrete. Any saving in labor cost, through use of "high"-slump concrete, would be more than offset by costs of delayed completion.





"REBORN" 18-story building, on New York City's Park Avenue, was a 40-year-old apartment house stripped to floor slab and bare steel for structural basis of new glass-walled office building.

New look for an old frame

In a unique transformation, a 40-year old, 18-story brick apartment house on New York City's Park Avenue has been changed into an up-to-the-minute glass-walled office building. The renovation job is perhaps the largest and most complete alteration of a building anywhere in the U. S.

At an estimated cost of $5 million, the job entailed tearing out everything but the steel frame and the four-inch floor slab from the old apartment building, and then starting construction of the new office with the structural steel and foundations already in place.

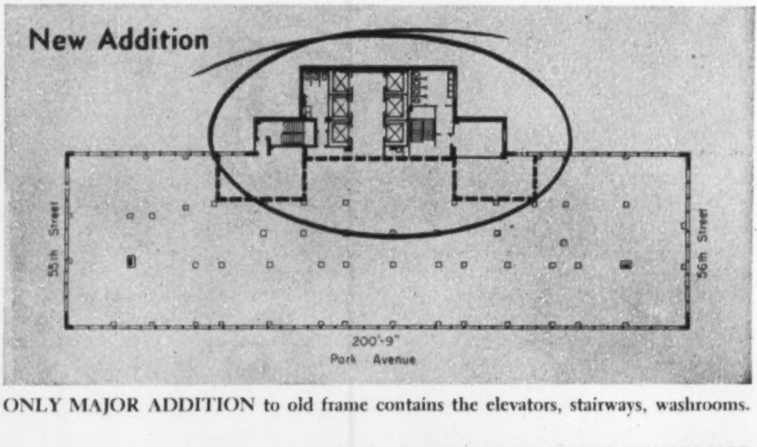
Rentals from the "re-born" office building will be realized about six months sooner than if construction had started from scratch on a cleared site. Re-use of the existing structural frame and foundation, plus the extra six months of rent, will save an estimated $1 million on the job for the owner-builder.

• Down to bare bones—Starting from the top of the apartment house, wreckers tore out the roof, walls and floor fill; removed plumbing, heating and electrical installations; chopped the fireproofing from the steel columns; and took out the old elevators, windows and doors. For renovation of the upper floors, the old elevator shafts temporarily were lined with wood, to serve as rubbish chutes to the fourth floor, where the shaft was sloped out to the street to fill rubbish trucks.

Removal of two columns—one at each of the old elevator shafts—was the only alteration to the old frame in applying it to the new office building. After the two columns were taken out, beams were inserted to take the dead load between two neighboring columns at each floor. Then, the old elevator shafts were sealed with a new slab at each floor.

At the back of the building, new elevators and washrooms were installed, in the only major structural addition to the old building. This addition, running from street level to roof, necessitated covering over two small court areas in the back of the old structure. A new slab and spandrel beam over the old court areas adds two more bays per floor.

• Setback requirement avoided—The standard New York City code specification for live-load design in apartments calls for 40 psf. The switch



ONLY MAJOR ADDITION to old frame contains the elevators, stairways, washrooms.

from apartment design to the specified 50-psf live load for commercial buildings was accomplished through elimination of the floor fill from the old building. Actually there was plenty of margin for heavier loads on the existing steel, since design stress 40 years ago for the steel frame was 16,000 psi, instead of the 20,000-psi design stress allowed today.

A further advantage gained through re-use of the old frame lies in the big floor area of the upper stories, which would have been reduced by setbacks had the new building been built from scratch. Unlike code requirements today, city zoning 40 years ago did not require setbacks from the street at various heights of the building. And since the new office building was filed with the building department as a "conversion" rather than brand new construction, no setbacks were required in the design of the new office building. The floor area consequently is the same on all 18 floors.

Floor to floor height in the new offices is 12 ft 2 in. From the standpoint of leasing office space this extra height—compared with floor-to-floor heights of 10 ft 8 in. now common—has been found a definite asset in meeting the desires of tenants.

On the Park Ave. side of the building, glass windows separated by opaque glass spandrel panels make up the whole wall. Brick and glass make up the exterior walls on the other three sides of the structure. The new building has a 200-ft front on Park Ave. and is 56 ft wide on the side streets.

Emery Roth and Sons, New York, are the architects, and the 430 Park Avenue Corp., New York, is the owner-builder.

Concrete runways crack; were laid in winter 1943

As a result of cracked and uneven concrete runway surfaces, planes were grounded last month at Larson Air Force Base, Moses Lake, Wash. Jet fighter planes at the base were transferred to Pacific Northwest areas, after two jets blew tires during takeoff and were heavily damaged.

Brig. Gen. Harold W. Bowman, commanding general at Larson, issued the statement that "our runways do need repair. Originally they were laid in 1943 in the dead of winter. Any time you lay concrete in freezing weather you are going to have trouble.

"The trouble is mostly cracking and breaking of the concrete itself. Some spots also sank a bit."

Larson's two concrete runways are 10,000 ft long and 500 ft wide. A team of engineers, including Air Force personnel, is making a study of the condition.

Industry looks to its waste disposal

Purdue conference considers new challenge from radioactive wastes along with many older but still pressing problems

The ninth annual Industrial Waste Conference at Purdue University last week looked ahead to the day when industry and public health authorities will have to cope with the problem of radioactive wastes.

This challenge plus a host of more immediate problems occupied 350 delegates from industry, public health agencies, sewage works and the universities in sessions lasting three days. Chairmanned by affable, hard-driving Don E. Bloodgood, professor of sanitary engineering at Purdue, the conference heard reports from some 50 speakers.

• Atomic wastes—First updating the conference on progress made in establishing water quality criteria in respect to pollution abatement from industrial wastes, W. W. Towne, U. S. Public Health Service, Cincinnati, the keynote speaker, then posed the oncoming challenge of dealing with radioactive wastes.

"With the advent of nuclear power as well as other expanding uses of fissionable products, the present day problems of waste disposal will be multiplied many times in the future," Towne declared in his paper, jointly authored with his assistant, John W. Wiseman.

It has been estimated that in the next 10 years, continued Towne, 10% of all power will be produced by nuclear energy. Also, an estimated one billion curries of radioactive material will be produced by reactors which are expected to be built during the year 1964.

Under present conditions this radioactive contamination would be discharged in a waste flow of 90 mgd. At present, 20 reactors are producing about 75,000,000 curries of radioactive material annually.

"Comparing these two figures," warned Towne, "will serve to indicate the problem that lies before us. Many of the present day questions must be answered—and answered soon.

"To date, pollution abatement has lagged behind pollution production by several years. In dealing with this problem of radioactive contamination, however, we must lead—not lag," he said.

• Radioactive sludge—Encouraging news was presented in a second paper on the treatment of radioactive wastes by Jess C. Dietz, professor of sanitary engineering, University of Illinois. "Radioactive phosphorus in the concentrations which can be expected to occur in sewage treatment plant operation does not affect normal sludge digestion," he said.

This conclusion, explained Dietz, is based on a two-year investigation that was conducted at the University of Illinois—in which there was cooperation with the Atomic Energy Commission—of the relation between radioactive isotopes and the anerobic digestion of sewage sludge.

"To the sewage plant operator the results of these investigations mean two things: If digestion is proceeding normally, the introduction of radioactive phosphate will not affect the digestion process. And the solid component of the sludge will contain the major portion of the radioactivity."

Another tentative conclusion of the investigation deals with radioactive iodine, said Dietz. Concentrations of 100 microcurries or less of radioactive iodine per liter of sludge have no effect on the anerobic digestion of sludge. About 75% of the radioactive iodine is found in the liquid component of the digesting sludge, he pointed out.

• Sanitary land fill—The use of sanitary land fill for disposing of industrial trash was advocated by Wilbur C. Webb, Pennsylvania Economy League, Philadelphia. Advantages of the method, he said, are both economy and the reclamation of submarginal land as a benefit to industry either direct or indirect through improved community relations.

The method should not be used, however, unless the chemical and physical properties of the bulk trash will respond safely to the treatment offered by compression, and the method will not pollute surface or subsurface water, he said.

• For cleaner streams—The regulatory agencies today are overburdened in their attempts to meet the ever growing problems of pollution abatement. This was the contention of D. M. Vail, of A. J. Boyton Co., Chicago. In view of this, he said, municipal and industrial representatives should bear a proportionate share of the enormous task and disseminate their findings.

Vail pointed out that of our daily requirement of 170 billion gallons of water, 135 billion gallons come from surface streams. More than 13 billion gallons are needed for municipal use and nearly 65 billion gallons for industry, he said.

• Waste pickle liquor—Disposal of waste pickle liquor—the effluent resulting from removing mill scale from steel—has been and continues to be a vexing problem for steel makers. And the problem won't be settled, declared Lorenz W. Heise, director of production laboratory, A. O. Smith Corp., until the right procedure is developed.

Such procedure must be one whereby the waste pickle liquor can be regenerated to the original sulphuric acid by a low capital investment plant at an overall cost within commercial market values for the chemicals recovered—or until some commercial use can be found for the filter cake. Until then the search, and research, will not be ended, he said.

• Biological treatment—There is widespread belief that biological methods of industrial wastes treatment—particularly the activated sludge process—must be controlled closely to produce satisfactory results, reported C. N. Sawyer, professor of sanitary chemistry, M.I.T. However, he said, investigations in this field of treatment reveal that:

1. While adaptation of activation sludge to temperature change is immediate, fluctuations at 12-hr intervals between 10 deg and 30 deg C, are not detrimental to sludge quality.

2. Biological purification of wastes with pH ranging from 5 to 11 can be accomplished by activated sludge, providing acids are not formed to depress the pH below 5. Activated sludges may be starved for periods of at least 3 weeks without seriously impairing their purification capacity. Full purification capacity will be restored in 2 to 5 days after resumption of feeding at full load, he said.

• Sludge disposal—Disposal of sludge from lime soda softening plants is a major problem, according to a paper prepared by Geo. D. Russell, of Russell & Axon, Inc., St. Louis. Reasons for this are the large number of people involved, the continuing demand for lime soda softening, legal restrictions and variance in the quality of the lime sludge.

Two recent developments in this field are worthy of note. One is the recovery of calcium carbonate from the waste sludge. The other combines the waste sludge with sewage in a municipal sewerage system, and treats the resultant combination.

The first of these methods has resulted in considerable savings to Miami, Fla., and the second—although beset with operational difficulties—has also saved money for Daytona Beach. Russell's paper was presented by Raymond L. Hanson, of Russell & Axon.

Ontario charges fraud on road construction

Three contracting companies and a number of highway department engineers have been charged with conspiracy to defraud the government of the Province of Ontario in connection with road work in the Fort William division.

A total of 15 warrants have been issued in three groups. One group names the Standard Paving Co., Ltd., an official of the firm and two highway engineers, one of them being the suspended chief engineer of the Ontario Highway Department. A second involves Tomlinson Brothers Ltd., an associated company, the heads of the two firms and two highway department engineers. Berman Construction Co., Ltd., is included in the third set of warrants.

The books of a number of contracting companies have been seized for examination. A special legislative committee of inquiry has been appointed by the provincial government and a Toronto firm of management consultants has been engaged to make a study of highway department operations.

California to survey state building needs

California's Governor Goodwin J. Knight has named a committee of state officials to study the state's building needs for the next five years. The survey was requested by the state senate and is to be completed in time for consideration at next year's session of the legislature.

The fiscal year budget beginning July 1 provides $48 million for state buildings but Governor Knight has indicated this will have to be increased if needs are to be met (ENR April 29, p. 36).

"I am asking this committee to make a realistic, down to earth, complete inventory of all essential needs and to recommend an orderly schedule of construction projects which must be accomplished in each of the next five years," Knight announced.

Since the end of World War II, California has spent almost $500 million in state buildings.

Lagoon to supply generator cooling water

A 240-acre ocean-water lagoon is being dredged to minus 8 ft below mean low tide to provide sufficient water for cooling operations at the $60-million steam-electric generating station of the San Diego Gas & Electric Co., near Carlsbad, Calif., Lagoon water passes under two highway bridges and a railway bridge, all of which had to be strengthened (ENR Nov. 19, 1953 p. 28). For cooling, the water will flow to intake tunnels near the plant (in right background of photo) and be circulated at 550 cfs. Outlet for water will have a by-pass to intake tunnels so that hot water can be recirculated periodically to control marine growth on intake tunnel walls. With the first of four projected units scheduled for completion in October, the plant will go into service with 100,000-kw capacity. Designed and built by the utility company, the plant will have an ultimate capacity of 400,000 kw.

Structural group explores new methods

A challenging program scrutinizing several new types of construction attracted 400 engineers to a conference of the Structural Division of the American Society of Civil Engineers, held in Kansas City last week.

The Kansas City Section of ASCE, of which R. R. Tipton, district bridge engineer of the Bureau of Public Roads, is president, was host for the two-day meeting. W. R. Kell, vice-president, Raymond Concrete Pile Co., was general chairman.

The conference probed such subjects as prestressed and precast concrete, lightweight aggregates for concrete, thin-shell structures, simplified design of steel rigid frames, and foundation problems. Among the more significant points covered were:

- **Prestressed concrete**—With proper precautions prestressed concrete can be very advantageous and economical. It particularly is adapted to factory-type production where quality and character of the resulting product can be controlled. However, further studies should be made of creep characteristics of high-strength steel. A specification should be developed for the performance of prestressed concrete, to be determined by non-destructive tests.—Prof. C. H. Scholer, Kansas State College.

- **Lightweight concrete**—When architects and engineers become more familiar with the potentialities of lightweight concrete, its use will become the rule rather than the exception in building and bridge construction.—Prof. Adrian Pauw, University of Missouri.

- **Precast concrete**—If precasting is to become competitive with other construction methods, standard sections and units must be developed that will be capable of mass production. Such sections must be developed with a view to transport and handling.—H. G. Schlitt, Deputy State Engineer, Nebraska.

- **Foundation problem**—Foundation settlement caused by the lowering of the water table during the drought of the last two years has resulted in structural damage to an estimated 65% of the homes in the Greater Kansas City area, costing between $20 million and $40 million to repair. Solution: deeper perimeter footings and more careful analyses of foundation materials.—Karl V. Taylor, Kansas City District, Corps of Engineers.

- **Thin-shell roofs**—They can be designed to create great strength. The concept is not new; nature created such a design in the common hen's egg, which has an average ratio of span to shell thickness of 40:1. But today we are designing thin shells of concrete with ratios of 800:1, or better. One problem, however, is the high cost of falsework, which, in some instances, may run as high as one-third the cost of the structure.—Prof. M. G. Salvadori, Columbia University.

Water shortage in N. J. spurs reservoir bills

A threatened water shortage in densely populated northern New Jersey has given added impetus to pending legislation to authorize construction of two major reservoirs.

Commenting on pending legislation covering water supply projects at Round Valley in Hunterdon County and on the Wharton Tract in Burlington and Atlantic counties, Gov. Robert Meyner said: "If the legislature enacts bills to create these reservoirs, and if the people by referendum in November support a state bond issue for the purpose, we may expect a solution of North Jersey's water supply problem for the next generation."

Jobs in the news

LIFT-SLAB OFFICE—Contract for the construction of a $15½-million, three-story office building for the Ford Motor Co. at Dearborn, Mich., has been let to the Long Construction Co., Kansas City, Mo. Concrete second and third floor and roof slabs of the 380,000-sq. ft. Building will be raised into place by the lift-slab method. Vacuum mats will be used in forming the slabs to accelerate curing. Giffels & Vallet, Inc., Detroit, Mich., are architect-engineers.

NAHB CENTER—The National Association of Home Builders has awarded the construction contract for its new $2-million National Housing Center, in Washing, D. C., to the Joseph F. Nebel Co., Washington, D. C. The eight-story, air conditioned, reinforced concrete building will serve both as headquarters for the NAHB and as a permanent exhibit center.

SKYSCRAPER—Vancouver, B. C., will get its first big office building to be put up since 1920, when the Utah Construction Co., Salt Lake City, starts construction in the fall on a $5-million, 20-story structure. Utah Construction as owner-builders, invested $1 million in acquiring an already built-up downtown site which will have to be cleared for the new building.

The water supply bills, which would require a bond issue in the neighborhood of $75 million or more, were introduced in the legislature in March. A public hearing was scheduled to be held early this week.

Toledo, Cleveland to prepare port development programs

Passage of the St. Lawrence Seaway Bill has induced the Toledo-Lucas (Ohio) County Port Commission to employ Harland Bartholomew & Associates, St. Louis, Mo., to prepare a master plan for the development of the port. The engineering firm will also prepare an industrial potential survey of the port area and submit its findings by Sept. 1 of this year.

In Cleveland, Ohio, the city has recommended that James C. Buckley, Inc., New York transportation consultants, conduct a survey of seaway needs for the port. The survey is to determine volume and character of seaway traffic in order to plan for new marine terminal and warehouse facilities, lake front development and industrial possibilities, and to decide what interim action should be taken to improve the port until the seaway is built.

Among the needs envisioned by Cleveland's first director of port control, William J. Rogers, is a $100-million breakwater along the lakefront to stop erosion of taxable land. If built, the breakwater would allow landfill that might result in construction of a major downtown airport.

Hawaiian public works program to be stepped up

Hawaiian public works will be stepped up as one means of relieving island unemployment, now at about 14,000 or more than 6% of the labor force.

Gov. Samuel W. King said $2.5 million will be added to the $6 million previously set aside for construction in the fiscal year starting July 1. In addition there will be a carry-over of $2 million from the $4 million programmed for the current fiscal year bringing the 1954-55 total of public works to $10.5 million.

Bond issues authorizations already are set up to finance the work which will include a $2.5-million Molokai irrigation project, and a $1.4-million University of Hawaii library. The territorial department is programming 9 million worth of work, half to be paid by federal aid. Principal highway projects, including construction rights of way, will be Kalihi Valley Tunnel approach road, $2 million; Nuuanu Valley highway, $1.65 million; Mauka arterial, $2 million; Hawaii Island belt road, $1.4 million.

Should homebuilders pay less than other contractors? No, say unions

There has been a growing conviction among house builders in recent years that they should not have to pay the same rates for labor as commercial and industrial contractors who have less direct contact with a price-conscious public.

Last week the Home Builders Assn. of Greater Cleveland broke into open revolt against the local Building Trades Employers Assn. and against construction unions located in the Cleveland area.

The housing contractors refused to match a 12½-cent-an-hour wage increase which has been given by the BTEA to most of Cleveland's building craftsmen.

Result is that over 20,000 workers have struck, stopping work on some 3,000 houses.

The homebuilders' group, many of whose members are also members of BTA has refused flatly to offer any pay increase.

It says, however, its members are willing to talk things over with the Cleveland AFL Building Trades Council.

The union group, however, sees nothing to talk about, insisting that its agreement with BTEA is binding on all contractors in the area and that the homebuilders have no right to bargain separately.

Commercial and industrial contractors, through BTEA, have agreed to a two-year contract, with a seven-and-one-half-cent pay raise, retroactive to May 1, and another five-cent increase effective Nov. 1, with a clause allowing wage negotiations to be reopened after one year.

The revolt of the Cleveland house builders is not a clear case of employer fighting employer, but rather has been interpreted as a study as to the degrees of resistance to union pressure in wage negotiations.

The homebuilders have said that they simply will not pay higher wages.

They claim that to do so would increase the price of a house, creating sales resistance and making low-cost financing more difficult.

Commercial and industrial builders, on the other hand, at first were sympathetic to the homebuilders' situation, but acceded to the unions' pay requests when it became apparent that a general construction strike might be the result of a hold-the-line wage stand.

Exception: R. I. carpenters accept dual scale

While house builders and their workers in Cleveland were locked in a showdown pay strike, carpenters in Rhode Island were trying out a new wrinkle in wage contracts, designed in recognition of the very differential which the Cleveland housing contractors were insisting should exist between pay scales on small homes and larger projects.

Under terms of the experimental agreement—between the Home Builders Assn. of Rhode Island and the Carpenters District Council of Providence—union workers on homes and other buildings costing $25,000 or more will get a 7½-cent-an-hour wage increase.

This was negotiated recently between the carpenters and the Associated General Contractors.

Carpenters working on houses costing less than $25,000 will continue at the old rate, $2.45 an hour.

The contract will run for two years, but the dual-scale clause permits review of the differential experiment after a year has elapsed.

Jerome J. Kearney, carpenter's business agent, gave three reasons for the unusual agreement:

- **Many carpenters working on houses in Rhode Island either are non-union or are willing to work temporarily below union rates. The union's strength is in heavy construction.**
- **In Rhode Island many relatives team up to contract their joint labor, and these family affairs have been found difficult to unionize. They provide tough competition for union rates and standards.**
- **Brokerage houses, which supply materials and contract directly for carpenters at the lowest prices available, tend to depress wages.**

Charles R. Bragg, spokesman for the homebuilders, estimated average non-union rates for carpenters in house building to be $2.30 an hour.

To have added 7½ cents to the present union hourly scale of $2.45 would have widened the difference between union labor and non-union workers to an uncomfortable 22½ cents an hour.

AEC stops contract, ends 10,000-worker strike

Atomic Energy Commission action to halt work on two disputed contracts brought a quick end last week to a strike of more than 10,000 construction workers at its huge Hanford Works near Richland, Wash.

AEC's stop order affects two contracts—for a total of $550,000—awarded to the Cisco Construction Co., of Portland, Ore. Cisco, a non-union organization had received the contracts for construction of a $71,200 silica waste storage tank, and a $479,000 transmission line and substations.

Crux of the dispute was a contract between the AFL Pasco-Kennewick Building Trades Council and the local Associated General Contractors chapter, which (according to union leaders) does not require union men to work with non-union craftsmen.

The Portland contractor has been working on his transmission line contract for more than a year, reportedly avoiding trouble by subcontracting all the work to union concerns. But when Cisco hired non-union men to work on the waste storage project a month ago, the unions prevented delivery of materials though they did not pull men off other jobs.

But last week, Cisco reportedly awarded a subcontract to another non-union firm (the Schultz Electric Co. of Pasco)—and union teamsters immediately refused to drive buses into the Hanford works. Within a short period, an unusual joint action of the 17 unions belonging to the Trades Council and four others had pulled 10,200 men off the job.

Now Cisco has filed charges of unfair labor practices with the National Labor Relations Board's Seattle office against the council, charging the council with trying to force a closed shop on Cisco's employes.

Carpenters fighting back

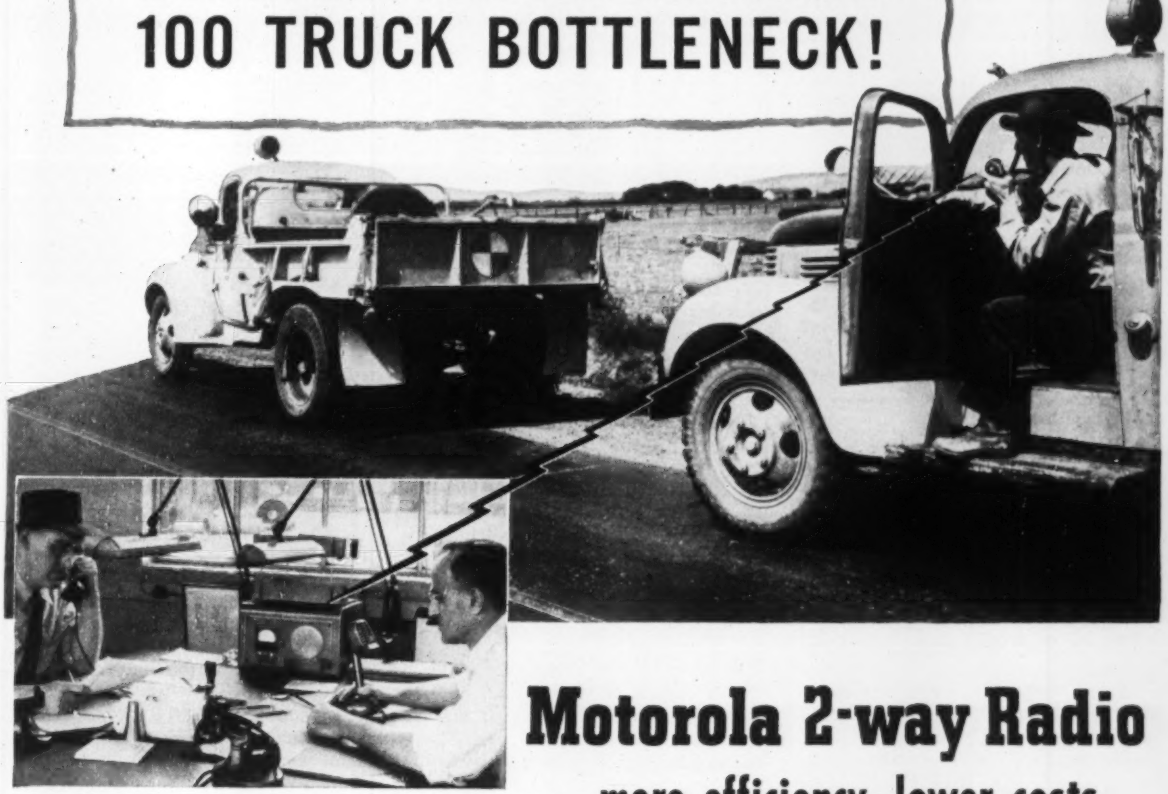
The carpenters' union, already heavily in the news (this page and page 30), was becoming involved in top-level and local-level efforts to fight off non-union and other-union competition.

At the top, the United Brotherhood of Carpenters and Joiners has set up a department of organization, headed by Frank Chapman, a veteran Seattle organizer.

At the local level the carpenters were fighting the impact of other unions.

2-WAY RADIO IN ACTION—NO. 4

How Radio Control Prevented a 100 TRUCK BOTTLENECK!



Dispatcher at headquarters receives report of road-block along planned route . . . flashes word to trucks enroute.

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A close call with not a moment to lose!

Only Motorola 2-way radio on the alert supervisor's truck prevented a $1200 loss on the job.

As it turned out, the trucks were quickly rerouted—saving approximately 150 truck-hours (at $8.00 per unit per hour.)

That's only one instance. Here are other ways Motorola saves and pays: (1) Provides instant, pinpoint command of all operations, even in remote locations; (2) Permits quick solutions to emergencies of all kinds; (3) Facilitates materials handling and materials delivery; (4) Allows maximum, split-second flexibility; (5) Increases coordination and efficiency and decreases "lost time"; (6) Helps to do the job *better* and *faster . . . at lower cost!*

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Carpenters out

Metal cabinet work issue in New York strength test

Irritation over assignment of metal cabinet work to another trade has resulted in the secession of the 32,000-member Carpenters' District Council from the Building and Construction Trades Council in New York City.

No one was surprised over the withdrawal. The immediate argument between the carpenters and the ironworkers unions over installation of metal sectional units on a New York hospital project was simply a reflection of a long-lasting feud between the Carpenters' District Council—personified by its president, Charles W. Hanson—and the Building Trades Employers' Assn. of Greater New York.

Under terms of their agreement with the BTEA, the building unions in New York have recognized the BTEA as a sort of high court in work assignment and other disputes. In complaining that New York is a flagrant exception to the rule in most other sections of the country, that carpenters install metal cabinets, Hanson has accused BTEA of building a "Chinese Wall" around the New York construction unions.

There are other levels of dispute too. The carpenters have been following a pattern of independence in New York—as they have nationally—for some time. Just last year Hanson's New York District Council explored the probability of a renewal of the master wage agreement which was well on the way to becoming a bargaining institution in the New York construction industry.

• **Why**—The independence of the carpenter, both nationally and in New York, can be understood most easily in the cold light of the fact that the carpenter is no longer the kingpin in construction labor. No more is he the highest paid craftsman, and moreover, he has to fight daily as other unions nibble at his jurisdiction in jobs where wood is being replaced by other materials.

But the carpenters' union is still the biggest in construction, with plenty of weight to throw around. So, the insecurity of technological displacement well might be held accountable for what some observers think is an overdeveloped feeling of independence.

Last year, when Hanson played the heavy contractors—not in the BTEA—against BTEA members in starting a move to sign his carpenters at higher rates than the other unions were going after under the master agreement between BTEA and the Building and Construction Trades Council, he emerged as something of a hero to rank and file union members, because he won a 33½-cent raise for his men.

This year's move has been interpreted as a flat bid for more power in the New York construction unions, and the guessing is that the carpenters won't be out of the council for too long, if Hanson can bring them back on his own terms. In the middle is Howard McSpedon, president of the council, who has the unhappy task of keeping internal peace without stepping too hard on any of the member unions.

The argument is in the hands of the chiefs of the ironworkers and carpenters unions now. Last week the disputants carried their cases to Chicago where the top men of both unions were taking part in sessions of the Executive Council of the AFL Building and Construction Trades Department. Guess was that the New York dispute would hasten a final definition of jurisdiction over installation of metal cabinets and similar units.

Carpenters and machinists reach work accord

The American Federation of Labor's plumbers and machinists unions came to terms on a new peace pact last week designed to keep their members from fighting for jobs. The agreement details the jurisdictional lines for each union, and sets rules to be followed in case these lines are crossed.

For the machinists, this was the third such agreement within the AFL. Similar pacts have been worked out with the teamsters and printing pressmen. The newest settlement came as the Building Trades Federation prepared for a Chicago Council Conference to thrash over a new program that would end all AFL jurisdictional warring on construction sites.

The machinists-plumbers pact provides, where a dispute arises, for local and then international representatives to attempt a settlement. If this fails, three-man committees from each union will make a try. Finally, the dispute goes to a neutral umpire selected by the union presidents.

The jurisdiction for both unions follows the lines set out by the parent AFL. The plumbers get all work that is an integral part of a plumbing or pipefitting system; the machinists are to handle manufacturing, erecting, installing, dismantling, repairing of machinery.

Phila. building trades strike against strikers

In an unusual action—aimed not at employers but at fellow workers—thousands of Philadelphia construction men walked off their jobs May 11, tying up construction work that was estimated to run into millions of dollars.

The action, according to spokesmen for the AFL Building and Construction Trades Council, quite frankly is aimed at the AFL steamfitters union, which has been off the jobs since May 3, in a separate dispute with the riggers union over the steamfitters' demand that they be assigned all hoisting work in connection with their trade.

Their action had slowed all construction work in the city to a crawl, as other trades caught up with the fitters' jobs. The concerted action May 11 was an open attempt by the remaining trades to force the steamfitters into submitting their jurisdictional dispute through regular disputes channels, and returning to work in the meantime.

• **Other troubles**—The strike-against-strike in Philadelphia was at the top of the news in a week of disputes and settlements around the country.

Strikes settled included: A three-day walkout of teamsters at Gallipolis, Ohio, where 900 workers were thrown out of work over the firing of a teamster member; a threatened walkout at Mansfield, Ohio, where carpenters agreed to continue work after getting a raise averaging 25¢ an hour.

Trouble brewing was at: Rochester, N. Y., where about 150 building projects were tied up, laborers threw picket lines around construction jobs; Salt Lake City, where 350 members of the painters' union walked off jobs in a dispute over the workers' demand for a 30¢ an hour raise; in 10 southwestern Michigan counties, where carpenters were trying to get a 15¢ an hour pay increase.

Labor briefs . . .

• **Compensation meet**—California AFL affiliates will meet at Los Angeles June 5-6 in their second week-end program, to consider the subject of workmen's compensation law.

• **More benefits**—Michigan's Governor Williams has signed into law a bill raising maximum and minimum benefits under the state workmen's compensation act by $4 per week in all categories.

WEATHER

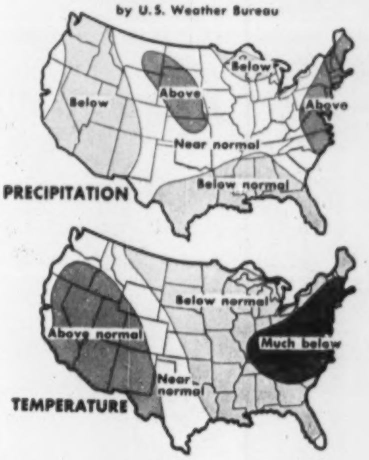
Observed weather in 20 cities, compared with normals

	Precipitation, inches				Temperature, degrees			
	Apr. 1954	Departure fr. normal	4 mos. 1954	Departure fr. normal	Mean Apr. '54	Departure fr. normal	Av. daily Maximum	Av. daily Minimum
Atlanta	1.91	−2.51	10.78	−6.05	65.5	+3.8	76.4	54.5
Baltimore	3.07	−0.65	10.26	−3.85	57.1	+4.7	68.9	45.3
Birmingham	3.20	−1.45	16.43	−4.68	67.2	+5.3	79.5	54.8
Boston	5.25	+1.79	15.21	+1.89	50.1	+2.9	59.9	40.3
Chicago	4.43	+1.61	12.93	+4.01	53.3	+5.2	63.6	42.9
Cincinnati	3.03	−0.61	9.74	−3.98	60.9	+7.3	72.4	49.3
Cleveland	5.36	+2.63	17.43	+7.31	54.6	+7.3	65.6	43.5
Dallas	4.62	+0.75	8.94	−2.83	71.3	+5.0	81.6	60.9
Denver	0.75	−1.15	1.26	−2.94	55.1	+6.5	68.4	41.8
Detroit	2.71	−0.20	11.75	+2.20	50.2	+3.8	60.6	39.7
Kansas City	4.51	−0.78	7.93	−1.67	61.0	+5.2	71.6	49.8
Los Angeles	0.13	−1.04	10.70	+1.42	60.9	−0.6	68.9	52.0
Minneapolis	3.53	+1.62	6.20	+1.12	46.5	+0.5	57.1	35.8
New Orleans	0.89	−4.56	9.49	−11.48	73.4	+3.6	81.6	65.1
New York	2.51	−0.71	8.93	−4.44	53.0	+3.2	61.7	44.2
Philadelphia	3.92	+0.54	11.31	−1.86	56.0	+3.3	66.2	45.8
Pittsburgh	3.91	+0.83	11.85	−0.67	58.9	+6.9	70.1	47.3
St. Louis	3.00	−1.01	6.23	−5.62	62.4	+5.9	73.9	50.9
San Francisco	0.82	−0.67	10.91	−1.30	57.0	+1.3	63.2	50.8
Seattle	2.62	+0.68	18.65	+5.42	48.7	−3.1	55.3	42.1

30-DAY WEATHER OUTLOOK

Mid-May to mid-June

by U.S. Weather Bureau



Precipitation range in 20 cities, in inches

Table shows range observed 33.3% of time. Rainfall heavier 33.3% of time, lighter 33.3% of time.
Computed by U. S. Weather Bureau (based on historical records of actual precipitation)

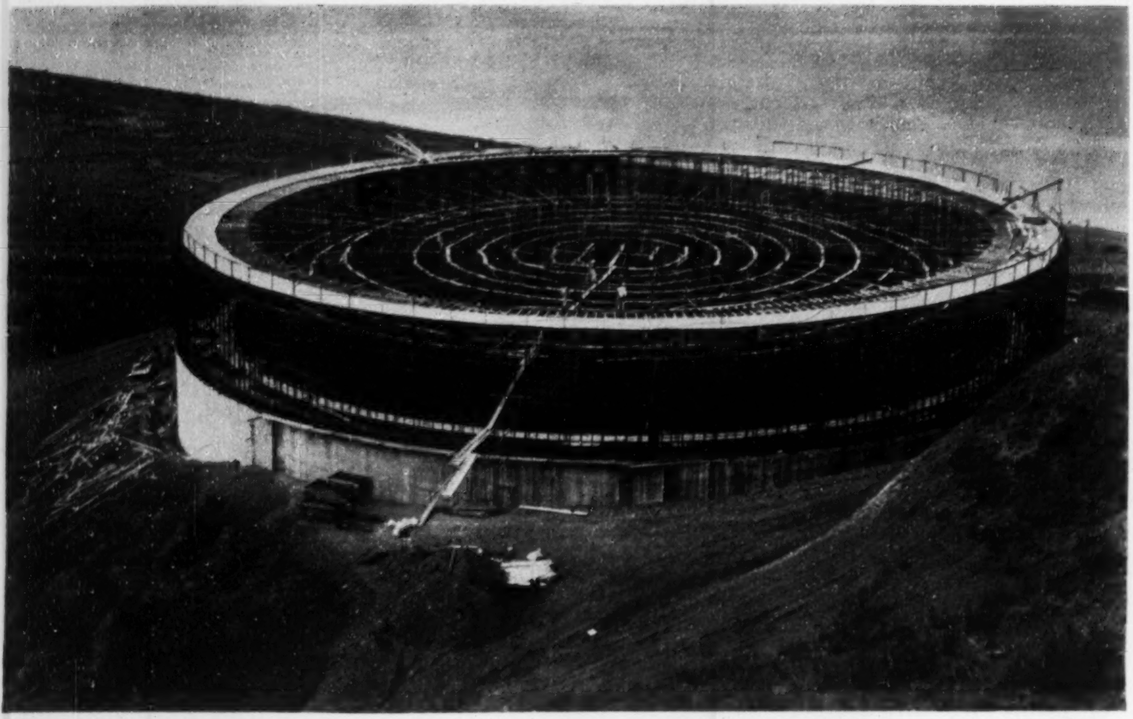
City	May	Mid. May-Mid. June	June	Mid. June-Mid. July	July	Mid. July-Mid. Aug.	Aug.	Mid. Aug.-Mid. Sept.	Sept.	Mid. Sept.-Mid. Oct.	Oct.	Mid. Oct.-Mid. Nov	Nov.	Mid. Nov.-Mid. Dec.
Atlanta	2.14/4.33	2.50/4.38	2.87/4.43	2.93/4.62	2.99/4.80	2.89/4.90	2.79/5.00	2.24/4.30	1.69/3.60	1.64/3.25	1.59/2.90	2.01/3.35	2.43/3.85	2.94/4.58
Baltimore	2.94/4.40	2.73/4.42	2.52/4.44	2.57/4.71	2.61/4.98	2.91/5.32	3.20/5.66	2.65/4.51	2.10/3.36	1.88/3.57	1.66/3.77	1.61/3.44	1.56/3.12	1.99/3.43
Birmingham	3.16/4.55	2.90/4.70	2.64/4.84	3.29/5.18	3.94/5.53	3.44/5.39	2.92/5.25	2.32/4.47	1.71/3.69	1.62/3.14	1.52/2.58	1.84/3.24	2.17/3.91	2.94/4.83
Boston	2.76/4.18	2.42/3.84	2.09/3.50	2.35/3.76	2.61/4.02	2.60/4.36	2.59/4.70	2.32/4.20	2.04/3.70	2.26/3.88	2.49/4.07	2.62/4.26	2.74/4.46	2.82/4.33
Chicago	2.16/4.00	2.29/3.88	2.42/3.67	2.46/3.66	2.49/3.65	2.31/3.65	2.13/3.65	2.11/3.70	2.09/3.75	1.85/3.42	1.59/3.10	1.59/2.95	1.59/2.80	1.46/2.62
Cincinnati	2.49/4.10	2.59/4.30	2.69/4.50	2.54/4.10	2.39/3.70	2.32/3.95	2.24/4.20	2.02/3.64	1.79/3.08	1.64/2.99†	1.49/2.90	1.74/3.28	1.99/3.67	2.14/3.48
Cleveland	2.33/3.49	2.17/3.53	2.00/3.56	2.24/3.82	2.47/4.08	2.15/3.84	1.83/3.60	2.07/3.51	2.30/3.41	2.03/3.29	1.74/3.16	1.79/2.97	1.82/2.77	1.76/2.68
Dallas	2.99/5.25	2.39/4.85	1.79/4.45	1.59/3.72	1.39/3.00	1.30/2.89	1.22/2.78	1.50/2.94	1.77/3.10	1.66/3.30	1.55/3.50	1.60/3.25	1.64/3.00	1.36/3.00
Denver	1.62/2.90	0.64/2.32	0.67/1.75	0.94/1.88	1.21/2.00	1.04/1.86	0.87/1.73	0.60/1.39	0.52/1.05	0.57/1.08	0.62/1.10	0.46/0.89	0.29/0.68	0.34/0.72
Detroit	2.49/3.67	2.66/3.88	2.84/4.10	2.46/3.90	2.09/3.70	1.94/3.54	1.79/3.38	1.80/3.41	1.82/3.44	1.72/3.02	1.63/2.60	1.70/2.66	1.77/2.73	1.70/2.66
Kansas City	3.24/5.40	3.42/5.82	3.61/6.25	3.19/5.47	2.77/4.69	2.74/4.84	2.70/5.00	2.84/5.00	2.99/5.00	2.34/4.54	1.69/4.07	1.48/3.21	1.27/2.35	1.02/1.95
Los Angeles	0.05/0.25	0.02/0.18	0.00/0.02	0.00/0.01	0.00/T	0.00/T	0.00/T	0.00/0.02	T/0.03	0.08/0.32	0.15/0.60	0.20/0.95	0.26/1.30	0.70/2.00
Minneapolis	2.64/3.98	2.89/4.49	3.14/5.00	2.64-4.50	2.14/4.00	2.16/3.85	2.19/3.70	2.24/3.78	2.29/3.85	1.79/3.15	1.29/2.45	0.98/2.01	0.67/1.57	0.62/1.44
New Orleans	2.64/5.25	3.18/5.88	3.72/6.50	4.54/6.95	5.37/7.40	4.90/7.08	4.44/6.75	3.78/6.12	3.11/5.50	2.55/4.81	1.99/4.12	2.34/4.40	2.69/4.67	2.96/4.92
New York	2.54/4.02	2.45/3.91	2.36/3.80	2.81/4.25	3.26/4.70	2.99/4.95	2.72/5.20	2.46/4.30	2.21/3.40	2.15/3.76	2.09/4.13	2.15/4.04	2.21/3.95	2.42/3.86
Philadelphia	2.39/4.40	2.54/4.25	2.69/4.10	2.94/4.24	3.19/4.37	2.99/4.91	2.79/5.45	2.44/4.62	2.09/3.90	2.04/3.85	1.99/3.80	2.18/3.65	2.36/3.50	2.50/3.70
Pittsburgh	2.49/3.75	2.68/3.98	2.86/4.20	2.79/4.35	2.72/4.50	2.52/4.15	2.32/3.80	2.20/3.30	1.87/2.80	1.98/3.00	2.09/3.20	1.96/2.96	1.84/2.72	1.96/3.00
St. Louis	3.13/5.20	2.96/5.25	2.79/5.30	2.60/4.78	2.41/4.25	2.28/4.18	2.14/4.11	2.12/3.84	2.09/3.58	1.89/3.42	1.69/3.25	1.78/3.28	1.86/3.30	1.70/3.05
San Francisco	0.18/0.69	0.09/0.37	0.00/0.05	0.00/0.03	0.00/0.01	0.00/0.00	0.00	0.00/0.13	0.00/0.26	0.10/0.78	0.19/1.20	1.12/2.25	1.04/3.30	1.62/4.28
Seattle	1.42/2.00	1.09/1.86	0.76/1.73	0.48/1.20	0.19/0.67	0.18/0.78	0.18/0.90	0.62/1.55	1.07/2.20	1.70/2.85	2.32/3.50	3.07/4.55	3.82/5.60	4.00/5.74

T—Traces (Less than 0.005 inches) † Lexington

Mean temperature range in 20 cities, in degrees F.

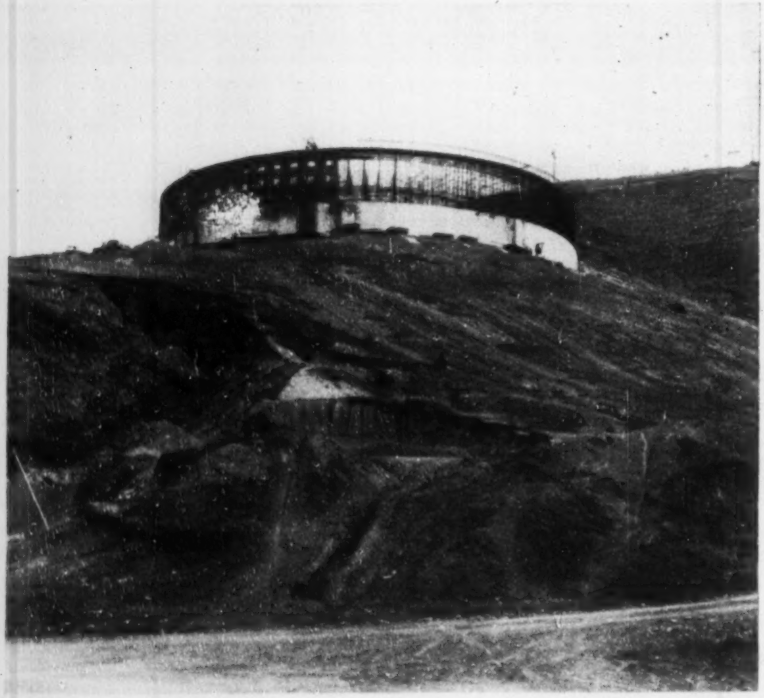
Table shows range observed 25% of time. Mean temperature higher 37.5% of time, lower 37.5% of time.
Computed by U. S. Weather Bureau (based on historical records of actual temperature)

City	May	Mid. May-Mid. June	June	Mid. June-Mid. July	July	Mid. July-Mid. Aug.	Aug.	Mid. Aug.-Mid. Sept.	Sept.	Mid. Sept.-Mid. Oct.	Oct.	Mid. Oct.-Mid. Nov.	Nov.	Mid. Nov.-Mid. Dec.
Atlanta	69.0/70.5	73.5/74.6	77.3/78.1	78.5/79.3	79.0/79.9	78.9/79.9	78.0/79.1	76.3/78.1	72.9/75.4	68.2/70.2	62.3/63.8	56.6/58.2	51.1/52.7	46.6/48.4
Baltimore	63.4/64.6	68.2/69.5	72.5/73.8	75.2/76.6	76.2/77.5	75.5/77.3	73.6/75.7	71.1/73.3	67.1/69.4	62.2/64.4	56.4/58.3	50.9/52.6	45.6/47.0	40.2/42.0
Birmingham	68.4/70.2	72.4/74.5	76.8/78.1	78.4/79.7	78.9/80.0	79.0/80.3	78.5/79.8	76.6/78.5	73.3/75.6	68.5/70.7	62.2/64.2	56.2/58.5	50.7/53.2	46.5/48.9
Boston	56.7/58.4	56.8/58.6	66.3/68.1	69.6/71.1	71.7/73.0	72.1/73.4	70.9/72.1	67.6/69.2	63.3/65.4	58.9/61.0	54.2/56.2	49.3/51.3	43.6/45.6	36.8/39.2
Chicago	57.9/60.5	63.1/66.1	68.0/71.2	71.6/74.0	73.7/75.1	73.8/75.4	72.0/73.7	68.8/70.7	64.5/66.7	59.3/61.7	52.8/55.3	45.9/48.6	38.6/41.5	31.2/35.0
Cincinnati	61.5/64.0	66.7/68.9	71.2/73.0	73.4/75.2	74.1/75.8	73.9/75.7	72.5/74.4	70.2/72.1	66.5/68.4	61.2/63.3	54.9/57.1	48.6/50.9	42.0/44.5	35.9/39.1
Cleveland	57.9/60.3	63.5/65.7	68.2/70.2	71.2/73.0	72.7/74.2	72.5/74.2	70.9/72.7	68.5/70.6	64.7/67.1	59.5/61.8	53.5/55.6	47.1/49.3	40.5/42.7	34.3/37.2
Dallas	72.8/75.0	77.2/78.8	81.1/82.2	83.3/84.6	84.5/86.4	85.6/87.3	85.1/86.7	82.3/83.9	78.1/79.7	73.8/75.1	68.5/69.4	61.4/63.1	54.3/56.7	49.9/52.3
Denver	55.2/57.4	60.0/62.1	65.4/67.5	69.7/71.5	72.1/73.7	72.5/74.0	70.8/72.2	67.3/68.6	62.2/63.4	56.7/58.3	50.8/52.8	44.5/47.2	38.0/41.4	33.5/36.7
Detroit	56.5/58.7	62.3/64.4	67.3/69.4	70.6/72.1	72.5/73.5	72.3/73.6	70.5/72.0	67.5/69.5	63.0/65.6	57.8/60.2	51.9/54.1	45.8/47.9	39.2/41.1	32.9/35.3
Kansas City	64.6/66.4	69.4/71.2	74.2/76.0	78.0/79.6	80.0/81.5	80.2/81.8	78.4/80.1	74.6/76.6	69.7/71.9	64.4/67.0	58.1/61.2	50.7/53.9	42.6/45.9	36.7/40.1
Los Angeles	61.4/62.8	62.5/64.0	63.9/65.4	65.4/67.0	66.9/68.4	67.5/68.9	67.4/68.6	66.8/68.1	65.9/67.3	64.4/65.9	62.7/64.2	60.5/62.1	57.9/59.8	56.5/58.2
Minneapolis	57.2/60.2	62.2/64.9	66.6/69.1	70.3/72.5	72.9/74.9	73.2/75.0	70.8/72.3	66.3/68.4	61.0/63.6	55.5/58.3	48.8/51.7	40.6/40.3	30.9/36.0	22.5/28.1
New Orleans	73.8/74.9	77.0/78.1	79.9/80.9	81.0/81.9	81.4/82.3	81.8/82.7	81.8/82.7	80.8/81.9	78.5/79.7	75.1/76.5	70.5/71.9	64.6/66.8	59.0/61.9	56.0/58.5
New York	60.6/62.1	65.9/67.5	70.4/72.2	73.6/75.0	75.2/76.3	75.1/75.5	73.6/74.9	71.0/72.5	67.4/69.0	62.7/64.3	57.0/58.6	51.8/53.2	46.5/47.9	40.2/42.3
Philadelphia	62.3/64.0	67.5/69.2	71.5/73.1	74.1/75.4	75.5/76.6	75.1/76.3	73.3/74.5	70.6/72.1	66.8/68.5	61.6/63.5	55.6/57.6	50.3/52.3	45.3/47.2	39.9/42.0
Pittsburgh	58.7/60.9	63.5/65.8	67.4/69.7	70.2/72.0	71.4/72.8	71.0/72.4	69.3/70.9	67.2/68.9	64.0/65.9	58.8/60.9	52.0/54.4	46.2/48.2	40.3/42.0	34.0/36.4
St. Louis	64.0/66.6	68.7/71.5	73.5/76.2	76.9/79.0	78.7/80.2	78.5/80.1	76.7/78.5	73.6/75.6	69.1/71.2	64.0/6.63	58.1/60.5	51.0/53.9	43.6/46.9	37.6/41.2
San Francisco	55.9/57.4	57.5/59.1	58.8/60.5	59.6/61.0	59.7/60.9	59.5/60.7	60.1/61.2	60.9/62.2	61.3/62.8	60.4/62.0	58.5/60.2	57.9/59.9	53.8/55.0	50.9/52.3
Seattle	54.2/56.3	56.9/58.5	59.3/60.4	61.7/62.7	63.6/64.6	63.8/65.0	62.7/64.1	60.8/62.0	58.0/59.0	54.8/56.1	51.0/52.5	41.8/43.3	43.1/44.5	41.0/42.4



GIANT PRESTRESSED CONCRETE WATER TANK is 200 ft dia and will hold 12 mg. Walls were cast with horizontal construction joint, a practice that experience on this tank proved unsatisfactory. (ENR photos)

New prestress method for biggest water tank

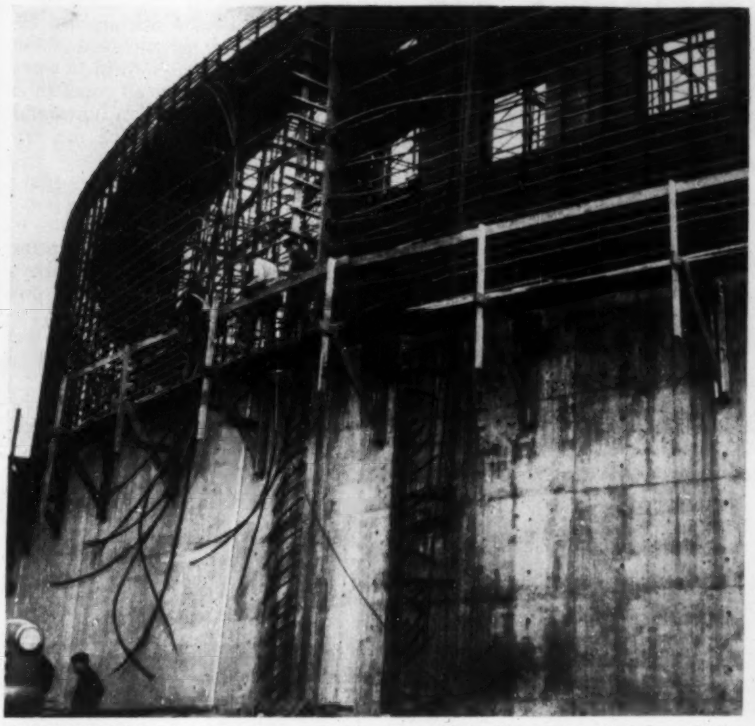


HILLSIDE SITE sets off huge prestressed concrete tank, also insures good drainage away from structure.

What may be the largest prestressed concrete tank ever built is under construction in Richmond, Calif., with completion scheduled for September. Incorporated in the 12-mg structure is a prestressing system for both vertical and horizontal tensioning that has never before been used in tank work in the United States. The 200-ft dia water tank has 43-ft 8-in. high walls, a dished bottom and a thin shell dome top.

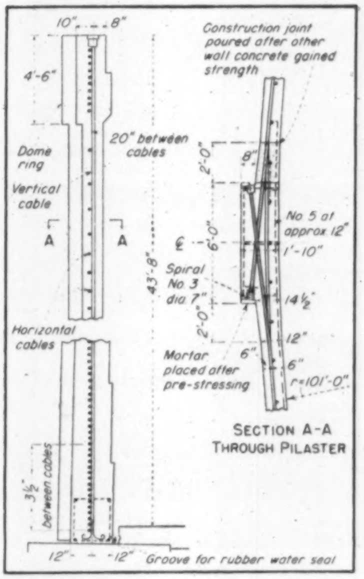
The huge reservoir was designed by and is being constructed for the East Bay Municipal Utility District that serves water to Oakland, Calif., and a large number of cities and unincorporated areas surrounding Oakland. EBMUD has a total of 30 prestressed tanks, more than any other agency in the world. These have been constructed during a period of 20 years and include the early bar-stressed units and, more recently, the wire-wrapped type.

The new Richmond reservoir was designed as a wire-wrapped unit but specifications permitted alternate bids on the basis of other designs. The low bid of $345,423.90 included the Freyssinet stressing system and was some $16,000 below the next bidder. EBMUD was willing to accept the al-



TANK WALL has 8 pilasters for prestressing Freyssinet cables; each cable covers 90 deg of arc. Form work for upper part of tank wall is partly in place.

ternate design even on such a large and important facility because, in the light of its wide previous experience in prestressed tanks, the design appeared to be quite satisfactory. Perhaps even more important, the district was anxious to encourage competition in bidding on such installations.


10"
8"
4'-6"
Construction joint poured after other wall concrete gained strength
20" between cables
Dome ring
Vertical cable
A
A
2'-0"
8"
6'-0"
No 5 at approx 12"
℄
1'-10"
43'-8"
Spiral No 3 dia 7"
14½"
2'-0"
12"
Horizontal cables
Mortar placed after pre-stressing
6"
6"
r=101'-0"
Section A-A Through Pilaster
3½" between cables
12"
12"
Groove for rubber water seal

HORIZONTAL prestressing system includes 90 prestressing bands with each band including four cables covering 90 deg of wall-arc. Pilasters are located 45 deg apart with alternate cables anchored at each pilaster. Vertical prestressing cables are spaced on 2-ft centers.

• Horizontal cables—Primary prestressing comes from a system of horizontal cables cast into the concrete wall of the tank. Every cable includes 18 high-strength steel wires of 0.196-in. dia each.

The horizontal cables are sheathed in 1¾-in. dia flexible metal tubing. Each cable spans 90 deg of the tank circumference. Thus to cover the entire circumference there are four cables comprising a prestressing band or a total of 360 horizontal cables. Pilasters anchoring every other band are located 45 deg apart. Thus, at each pilaster two cables in one band are anchored and the cables in the next adjacent bands are continuous.

Cable spacing in the 43-ft 8-in. high tank wall varies from 3½ in. at the bottom to 2 ft just below the dome ring. Additional cables are inserted in the dome ring to give it support.

• Prestress application—Except for some minor preliminary work (to close shrinkage cracks and to restrain the dome as it is poured), stressing will be done after all concrete is placed. Each horizontal cable is tensioned by

(*Continued on page 34*)

CABLES ARE PLACED by reinforcing-steel workers. Horizontal cables are sheathed in flexible metal tube. Vertical cables are in solid pipe.

CABLE ANCHORAGES are given additional reinforcing to resist high stresses. Note notched plate attached to vertical pipe to hold horizontal cables.

WORKMAN TIGHTENS wedges on prestressing jack.

AIR POWERED PUMP develops pressure in hydraulic system for prestressing jacks. Pump can handle four jacks at one time with each getting the same pressure.

jacking at both ends simultaneously. The wires are given an initial stress of 188,000 psi. This is gaged two ways: by (1) measuring elongation to see if it is 12½ in. and (2) developing a gage pressure of 6,000 psi on each jack.

As is normal in prestressing practice, it is anticipated that the initial stress will relax partly because of plastic flow and other factors. Thus, the final maximum stress in the wires will be in the neighborhood of 166,000 psi maximum. But pulling the wires around a 90 deg arc develops friction. So a maximum initial stress of 188,000 psi is reached near the end of each cable. Minimum initial stress, estimated at 146,000 psi, will be reached at the middle of each cable. The cable mid-point, however, corresponds to the end of the next adjacent cables so compression imposed on the concrete wall will be nearly uniform.

• Compression after filling—The prestressing system is designed so that when the tank is full there still will be compression in the wall concrete. And the concrete thickness is designed so that compression will not exceed 1,000 psi. Wall thickness at the base is 2 ft. And it is reduced 2 in. each 4 ft in height to a minimum of 12 in. at a 24-ft height. The dome ring is 24 in. thick. Pilasters are 1 ft 10 in. thick except at the dome ring where they are 2 to 10 in. thick.

Original plans called for the walls to be poured for the full height in 8 vertical segments 80 ft long. A 2-ft separation between segments was to be filled in with concrete after shrinkage had taken place. This would have meant a pour of nearly 200 cu yd of concrete for each of the 8 segments.

As space on the hillside was restricted, the contractor was permitted to pour the bottom 20 ft of wall height first with the top portion to be poured later. The result was 80-ft long panels that developed shrinkage cracks.

In an attempt to close these cracks the bottom parts of the walls were prestressed partially before the top parts were poured. The engineers feared that the top portion of the wall would lock the shrinkage cracks open, preventing their closure by prestressing. This initial prestressing closed the cracks enough to develop circumferential compression across them. But it is not known whether they are watertight. As a precaution, the cracks will be grooved and calked from the inside with a rubber base compound.

EBMUD engineers are convinced that pouring such walls with a horizontal construction joint is not desirable. All previous tanks were poured in sections with vertical joints only. All future tanks built by EBMUD will have no horizontal construction joints. On the Richmond tank the remainder of the wall is to be poured in 40-ft wide panels instead of 80-ft widths.

Concrete for the tank is required to develop 4,500 psi. High strength is particularly necessary in the pilaster section where the cable anchorages induce high stress in the concrete.

The bottom 8 ft of wall is poured with ¾-in. maximum aggregate because of close spacing of the prestressing cables. Mix for the bottom portion includes 660 lb of cement and 35 lb of a pozzolan per cubic yard. The rest of the wall includes 1½-in. maximum aggregate and has 625 lb of cement together with 33 lb of the pozzolan per cubic yard. An air-entraining admixture is added to all concrete. Water cement ratio varies from 0.4 to 0.47.

• Vertical prestressing—To resist bending moment developed in a vertical section, the tank walls include vertical prestressing cables, which are also 18-wire units. They are anchored at the bottom by embedding individual wires in the concrete. After all concrete is poured but before major horizontal prestressing is accomplished the vertical cables are stressed.

The tank wall is left free to move at the bottom under prestressing force. But the friction developed results in bending moment in a vertical plane with the maximum some 5 ft above the tank bottom. The vertical prestressing puts the wall under compression so no tension develops in the concrete due to bending moment in a vertical plane.

The cables are spaced on 2-ft centers with a total of 320 required. Smooth light-gage pipe houses the vertical cables. A steel strip attached to the pipe is notched to position horizontal cables. After prestressing both horizontal and vertical cables are encased in grout.

A water seal is formed between the bottom slab of the tank and the wall by use of a rubber seal. This method has been employed by the EBMUD on tanks for a number of years. It employs half-round steel bars on each side of a rubber tube. Bottom bar is threaded to receive a stud which extends through the bar, the rubber tube and the top half round bar. Torque wrenches tighten nuts on the top end of the stud to compress the rubber tube against wall and floor concrete. Tensioning torque is carefully controlled to prevent overstress of wall concrete.

Foundation of the tank is carefully drained to prevent development of pressure. It includes a layer of gravel covered with an asphaltic emulsion. And an underdrain system leads away from the tank.

Top is a spherical dome of 4½-in. minimum thickness. The dome ring is given some initial tension before the dome proper is cast. Then, after it is cured, it is given full tension putting the entire dome in compression and releasing the weight of the dome from forms.

• Credits—R. C. Kennedy is chief engineer of the East Bay Municipal Utility District. Design of the tank was under the direction of J. W. Trahern, supervising civil engineer. Design was accomplished by C. F. Yerby assisted by L. H. Lee and V. M. Gallo. Construction is supervised by George Colby with W. E. Bradbury as resident engineer. The prestressing system was designed by the Freyssinet Company, Inc., with some modifications suggested by EBMUD.

Contractor of the construction project is Erickson, Phillips and Weisberg of Concord, Calif.

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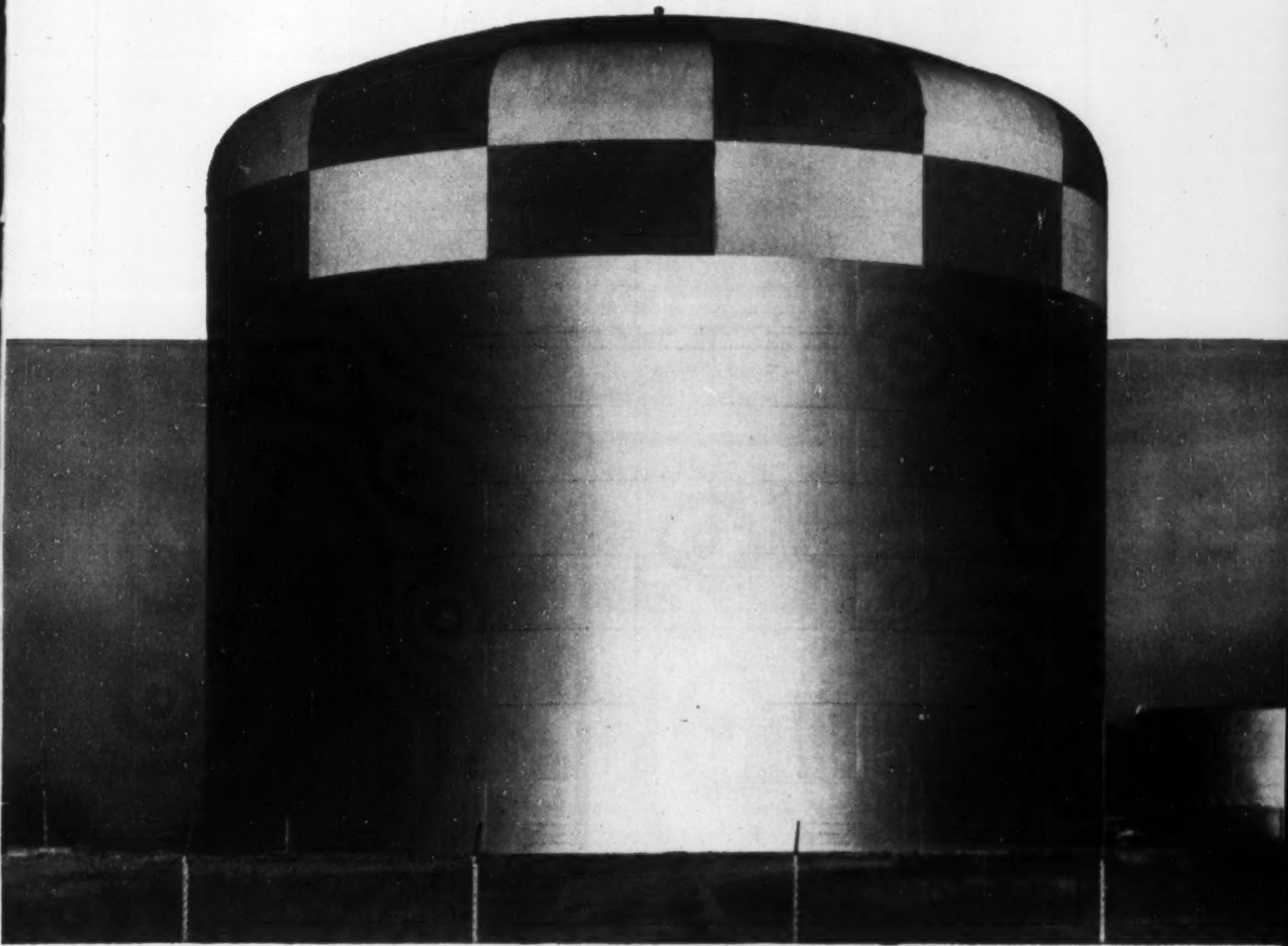
(CAPACITY 7,268,000 GALLONS)

for South Pittsburgh Water Company



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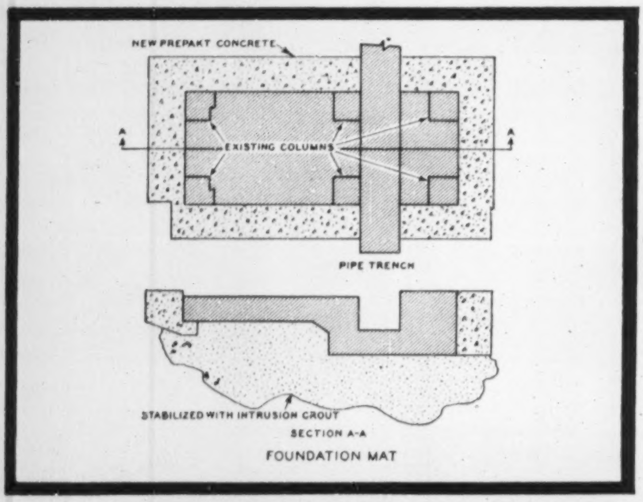
New Turbine Installed on Prepakt

360 cu. yds. of Prepakt Concrete Placed as Madison Gas & Electric Expands Capacity

Prepakt methods and materials recently simplified the installation of a new turbine for the Madison Gas & Electric Co., Madison, Wisconsin. This 250-ton, 30,000 KW steam turbine replaced a 15,000 KW unit at the Blount Street Station.

Modification of the existing foundation for the new turbine was executed by Prepakt despite difficult problems. To reduce out-of-service time, much work was done before shutting down the old turbine.

The characteristics of Prepakt Concrete make it ideal for building new structures as well as modifying existing ones. It was particularly advantageous for this job, which required enlargement of the existing base and placement of new concrete around dense steel reinforcement.

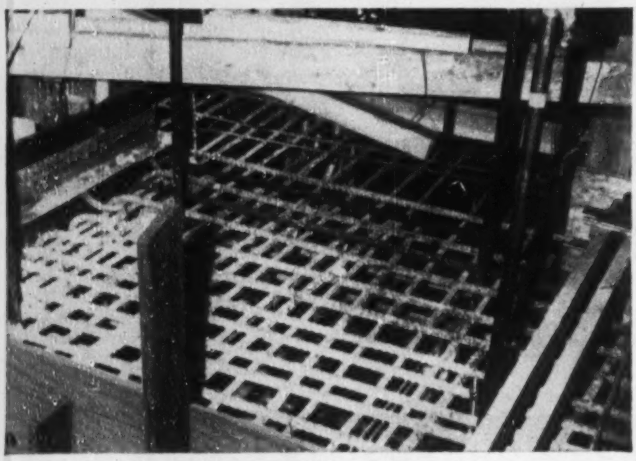


FOUNDATION MAT

Preliminary investigation of the foundation mat revealed it to be resting on soft clay some 13 feet below lake level. To support the increased load, this soil was stabilized with Intrusion Grout.

The mat was then enlarged by placing 18 foundation blocks totaling some 150 cu. yds. of Prepakt Concrete. This Prepakt Concrete was made by preplacing coarse aggregate in forms, then intruding all voids with Intrusion Mortar. The high-strength bond of the Prepakt Concrete with the existing concrete formed a dense monolithic base for the turbine foundation.

This phase of the work was completed with no interruption of power generation.



TURBINE

The superstructure of the turbine foundation was constructed by enlarging the existing support columns and beams. To achieve the desired load capacity, the design called for the addition of heavily reinforced Prepakt Concrete.

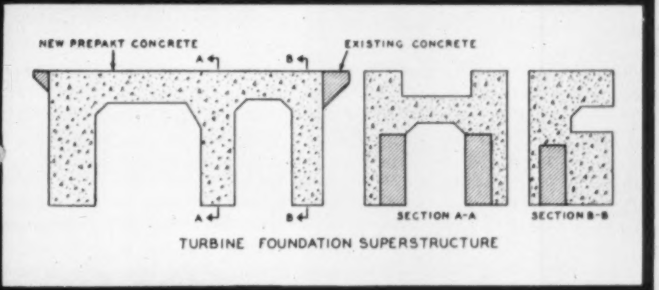
In contrast to conventional concrete, it is easy to place good quality, high-strength Prepakt Concrete around even intense reinforcement. Since Prepakt Concrete is made "in-the-form", there are no problems of delays in delivery, cold joints or premature setting.

Pipes for pumping Intrusion Mortar are inserted among reinforcing steel prior to placement of aggregate at Madison power plant.

Consulting Engineers: Mead and Hunt, Inc., Madison, Wisc.

Foundation

Installation of new 30,000 KW turbine on Prepakt foundation is partially completed here.



TURBINE FOUNDATION SUPERSTRUCTURE

(Above) Diagram shows method of enlarging existing columns and complexity of entire foundation.

(Left) Massive size of Prepakt foundation for new steam turbine is indicated by this view of completed structure.

FOUNDATION

Some 210 cu. yds. of Prepakt Concrete were placed to provide a stable foundation structure for Madison's new turbine.

By taking full advantage of Prepakt's unique methods and versatile materials, Madison Gas & Electric Co. was able to increase generating capacity with minimum down time and with important economies.

You may obtain full information on Prepakt methods and materials by sending a request on your letterhead to the Main Office, Room 779-O, Union Commerce Building, Cleveland.

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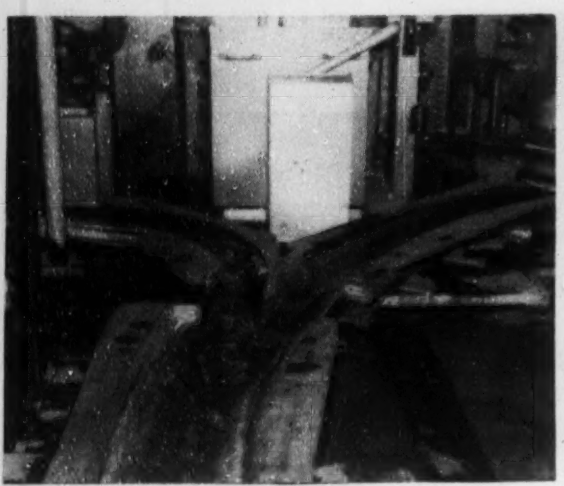
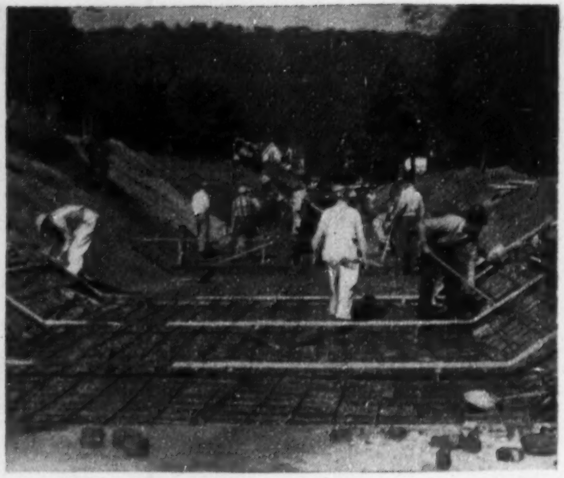


STILLING BASIN WAS ELIMINATED by redesign and model study leading to this junction of the two fast streams.



SLAB THICKNESS WAS MINIMIZED by using trapezoidal instead of rectangular channel. Reinforcing is for temperature.

Hydraulic and structural design changes . . .

E. H. Bourquard
Chief, Division of Flood Control
Department of Forest and Waters,
Harrisburg, Pa.

Supercritical flow in trapezoidal concrete channels was found to be the only feasible means of handling floods on Mill Creek and the Allegheny River at Coudersport, Pa. That is, it was found to be the best of several alternatives on the basis of cost, and cost dictated on this job now being done with state and local money.

Residents of Coudersport have been subjected to floods as far back as they can recall, their worst having occurred on July 18, 1942, when damages totaled more than $1 million. The Pittsburgh District, U.S. Corps of Engineers, made the first serious study of possible means of protecting the Borough of Coudersport from floods on Mill Creek and the Allegheny River. Due to the Korean conflict the district was delayed in carrying the project further. The findings of preliminary studies were furnished the Department of Forests and Waters of Pennsylvania and were of invaluable assistance in the design and construction of the project now under way.

• Federal plan—The district had developed a preliminary plan of protection which provided for 3,110 ft of improved earth channel and 5,627 ft of concrete-lined channel in the Allegheny River; 1,248 ft of concrete-lined channel and 2,050 ft of earth dike on Mill Creek. Debris basins and entrance structures were provided at upper ends of the concrete channels on both Mill Creek and the Allegheny River. One stilling basin was to be constructed just below the junction of the streams and another at the lower end of the concrete channel on the Allegheny River. Estimated construction cost of this plan was just over $2 million, exclusive of land damages and utility relocations.

• Revised by state—In 1951, the Department was requested to construct the proposed project. However, only limited funds were available so drastic reductions in costs were absolutely necessary. Revision of two features of the plan offered means of cutting construction costs: one was to reduce the thickness of the concrete channel lining and the other to alter the junction of the two streams to eliminate need of a stilling basin at that point.

Concrete lining in the channels was one of the major items of cost, and within limits this cost varied almost directly with the thickness of lining.

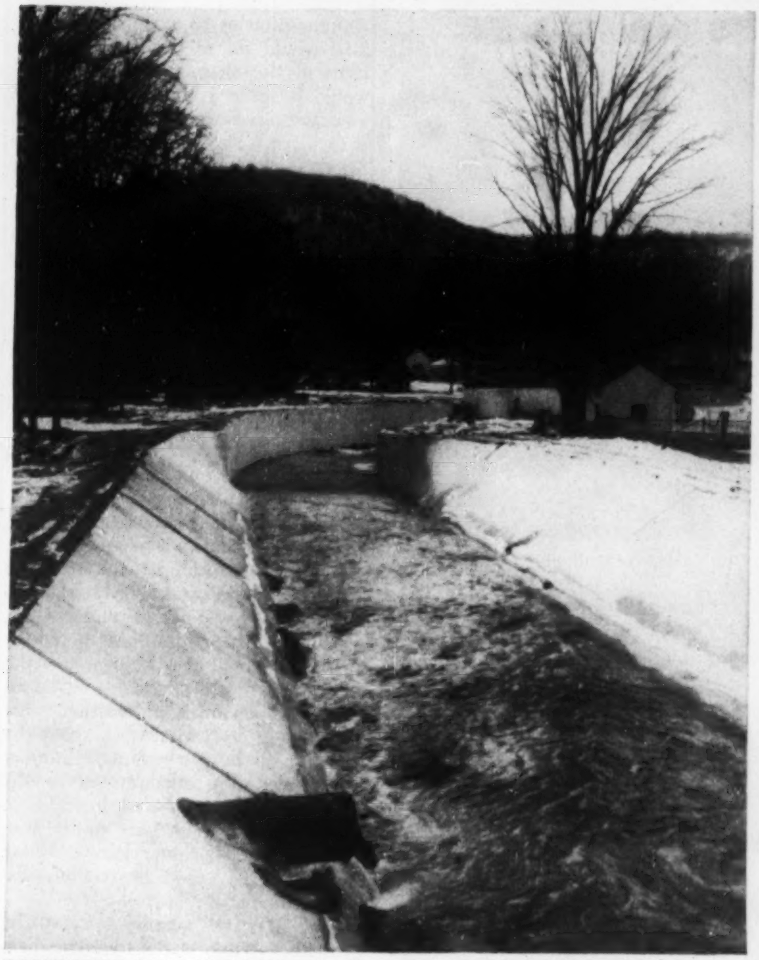
With the assistance of the Portland Cement Association, data were collected on concrete channels in this country. In the western states concrete channel linings of 1 to 2½-in. thickness are fairly common. However, in all cases investigated, these channels were not subject to severe winter weather, and flow velocities were low. Failure of a portion of the lining would not seriously jeopardize the entire channel. High velocity channels, subject to severe weathering, had linings of 4 in. or more in thickness.

In the northeastern states, concrete linings are considerably thicker, most of the larger channels having thicknesses of 8 in. or more. The probable reason for this increase is that concrete linings are not placed in open country, to prevent seepage losses, but rather in built-up areas, to prevent bank erosion and to increase channel capacities. Failure of the lining would, in most cases, result in destruction of the downstream channel and damage to adjoining properties. The additional thickness of concrete appears to be a safety factor against such destruction and damage.

The concrete lining in the Coudersport project must withstand rather severe weathering, supercritical flow velocities, and abrasion from sand and gravel carried by the flow. However, no loading would be placed on the slabs because the side slopes are flatter than the angle of repose of the bank material, and a drainage system is provided under the lining to relieve hydrostatic pressures. Unequal settlement of the foundation material could cause internal stresses in the slab, but such settlement should be slight. The bottom and banks of the streams are predominantly gravel, or silty sands, and any additional fill is selected material rolled in place.

• Thinnest slabs practical—Available information indicated that a 4½ or 5-in. lining would be satisfactory. However, a factor to be considered was the probable bid prices for slabs of various thicknesses. In discussing this with contractors, they believe that any reduction below 6 in. thickness would not result in a lesser cost. There are two reasons for this: first, their experience has generally been on slabs of 6 in. or greater thickness; second, the contractor must maintain the work during the two-year construction period and with a lighter slab would be apprehensive of damage to partially completed work during the spring floods.

A 6-in. thickness was used.



RESULTING CHANNEL of the Allegheny upstream from Mill Creek junction has just the right transition from trapezoidal to rectangular cross-section above sharp curve.

. . . lower local floodway cost

• Basin eliminated—Elimination of stilling basin at the junction of the two streams offered a means of reducing the cost of construction. If the energy dissipated in these basins could be conserved and utilized to increase flow velocities downstream, the channel below the junction could be reduced in size.

The Allegheny River made an abrupt right angle turn at the junction with Mill Creek. An upstream bridge over the river and other existing structures limited the radius of curvature of the improved channel to about 160 ft. The design flow, if at subcritical depths, could not be retained in a trapezoidal channel having such a short radius. A rectangular channel with a super-elevated invert was necessary. To improve flow conditions, a spiral casement was provided above the curve.

Arrangements were made with Bucknell University at Lewisburg, Pa., for a hydraulic model study. The model was constructed of wood to an undistorted scale of 1:40. Design flows of 6,000 cfs in the Allegheny River above the junction, 4,000 cfs in Mill Creek and 10,000 cfs were reduced to 0.988 cfs, 0.593 cfs and 0.395 cfs respectively in the model.

The first layout tested proved worthy of the study. Water overflowed all the channels at the junction at design flows. Another junction layout was developed—only partially satisfactory. Analysis of the test data showed that the trouble was in the transition from a trapezoidal section to a rectangular section. The third model layout corrected this difficulty by adjusting the bottom grades at the transition and changing the bottom width of the rectangular channel from 40 to 30 ft.

This layout proved satisfactory for both channels above the junction, the water surfaces in these channels being in close agreement with the computed flow lines. However, the revision had lowered the grade of the rectangular channel and sufficient energy was not available downstream for the flow below the junction to stay in a supercritical state. A partial hydraulic jump was formed, and the design flow (10,000 cfs) topped the channel. It was found that by increasing the energy of the flow in the rectangular channel the flow below the junction would remain supercritical. Test measurements were made to determine what minimum differences in energy and momentum were necessary above and below the junction to maintain sub-critical depths throughout.

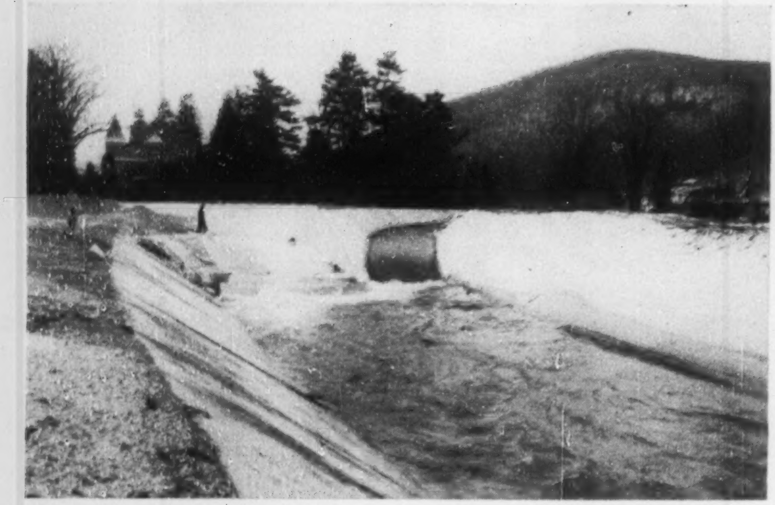
With this information the fourth model layout was designed and constructed. In this model, flows in all the channels were in accord with the design computations. The warped slopes in the transition from the trapezoidal channel into the rectangular channel set up standing waves in the latter channel which topped the walls at two points. Training walls were tried in and below the transition but they did little to dampen these waves. After much experimenting, it was found that, by moving the warped wall on the right bank upstream a certain distance, the waves were considerably reduced in size. The transition in the model was then reconstructed with the warped wall on the right bank 34 ft upstream of the warped wall on the opposite bank. This change reduced the standing waves in the rectangular channel to such an extent that further study was not warranted.

• Cost lowered—The two revisions—reduction in thickness of channel lining and elimination of the stilling basins had considerable effect on the total cost of the project. The first reduced the concrete yardage in the channel lining about 50%. Without the stilling basins at the junction, velocity of flow in the channel downstream increased from 13.9 fps to 21.9 fps; this permitted a smaller channel section, meaning less concrete and excavation.

The Coudersport project was advertised last April, at a time when rains had swollen the streams. No bids were received. The project was readvertised; there were two bidders then. The low bid of $855,555 was submitted by H. T. Osburn and Co., Inc., of Franklin, Pa. Work officially started June 18, 1953.

• Dewatering trick—The method of stream diversion was left to the contractor. He decided to store the stream flow in the debris basins. Measurement was made of the stream flow and the capacities of the debris ba-

(Continued on page 40)



JUNCTION of the two streams is capable of doing, hydraulically, the job which normally a stilling basin might have done.

DIVERSION BY STORAGE—Contractor got away with storing stream flow behind temporary earth dam while pouring downstream channel lining.

sins. It was found that the normal low water flow could be stored for 2 to 3 days in these basins. The contractor first constructed the inlet structures, diverting the water around the working areas. Then he built an earth dam with a 3-ft outlet pipe and gate, across the stream just above each of the inlet structures.

This scheme for handling the stream flow proved successful. One contributing factor was the dry summer and fall last year. If the two seasons had been unusually wet, the story might have been different, but there is little doubt that the scheme was the most economical and efficient that could have been used.

Contract plans called for the bottom and side slopes of the trapezoidal channel to be placed separately with a construction joint at the bottom of each slope. To utilize the concrete channel to handle releases of water from the storage basins, the contractor requested and received permission to cast the bottom and 3 ft-4 in up each slope in one operation. This provided a channel 1 ft-10 in deep to handle the flow releases. It also allowed the contractor to concentrate on placement of the channel bottom and delay placing the upper portion of the side slopes until weather or flow conditions prevented work on the bottom slab.

- **Slab protection**—There was some apprehension as to what the released flow would do to newly placed sections of the channel. The concrete would be only 1 to 3 days old, and flow velocities would be as high as 6 to 8 fps. The contract did provide for vacuum processing of the channel lining and the contractor was permitted to use membrane curing. These two items offered protection against scouring but not sufficient to prevent some damage to the concrete surface. The contractor was then required to cover the new sections with waterproof paper prior to releasing flow from the basins. The paper was the answer. Subsequent flows did no damage to the concrete surfaces except where the paper was not properly weighted down and pieces of the paper washed away.

Thickness of the concrete lining made it essential that adequate drainage be provided under the slabs on the side slopes. A gravel blanket, 6 in thick, was placed under these slabs and perforated drain pipe was installed along the bottom of the blanket. These pipes were continuous along the channel and outlets were provided at 30-ft intervals. Above the junction of the two streams, a number of springs were encountered so the drain pipes were placed lower than channel grade to prevent uplift pressure on the bottom slab. Where necessary, the gravel blanket was extended under the bottom slab.

The project is now 75% complete, with the bottom of the concrete channel virtually finished and over 40% of the side slopes in place.

The project is a joint undertaking of the Department of Forests and Waters and the Borough of Coudersport. The department did the design, provided the necessary funds for construction, and administered the construction contract. The borough paid $50,000 of the construction costs, made all necessary alterations to utility lines, raised two bridges and furnished all lands and rights-of-way for the project.

G. H. Geil, assistant chief, Division of Flood Control, was in direct charge of the design and preparation of contract plans. Model studies were under the direction of George Herman, instructor at Bucknell. Prof. R. A. Gardner of the university helped in evaluating model test data.

Construction of the project is under Charles Englemen, superintendent, H. T. Osburn & Co., Inc. H. T. Osburn developed the scheme for handling the stream flow and did much of the construction planning. The Department of Forests and Waters has V. M. Beard as its resident engineer. T. H. Mathews is chief engineer of the department.

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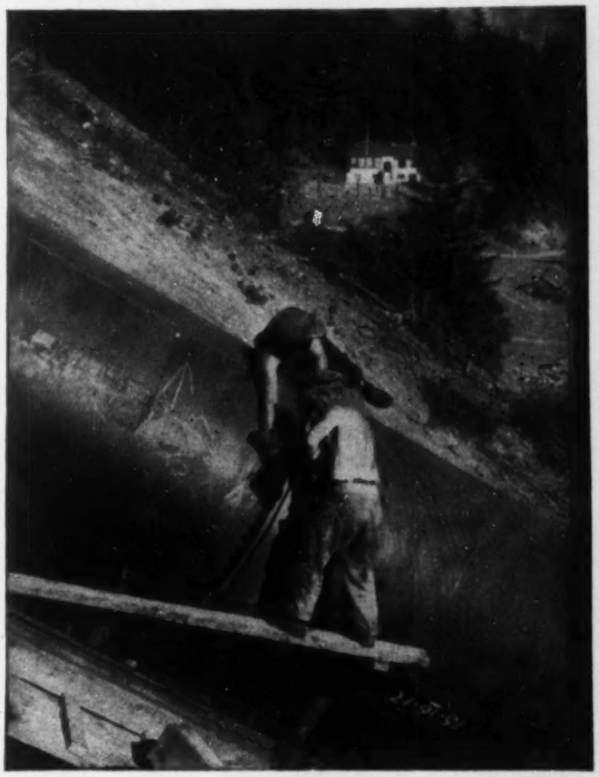

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	American Cast Iron Pipe Co. Birmingham, Ala.	James B. Clow & Sons Chicago, Ill.	Lynchburg Foundry Co. Lynchburg, Va.	McWane Cast Iron Pipe Co. Birmingham, Ala.	Pacific States Cast Iron Pipe Co. Provo, Utah	Warren Foundry & Pipe Corp. New York, N.Y.	R. D. Wood Company Philadelphia, Pa.
WHAT % OF TOTAL cast-iron water main sales have been mechanical joints.	1951 — 48% 1952 — 50.5% 1953 — 59.5%	1951 — 55% 1952 — 67% 1953 — 75%	1953 — 55 to 60%	1951 — 50% 1952 — 60% 953 — 70%	1951 — 18% 1952 — 45.5% 1953 — 42.7%	1951 — 5% 1952 — 10% 1953 — 12%	1951 } negligible 1952 } 1953 — 20%
WHAT TO EXPECT in the future.	1954 — 60%	1954 — 82% 1955 — 86%	1954 — 60% 1955 — 65 to 70%	1954 — 75% 1955 — 85%	1954 — 45% 1955 — 45%	1954 — 15% 1955 — 25%	1954 — 50%
HOW MUCH MORE than bell-and-spigot pipe are mechanical joint pipe costs	9 to 11%	10% up to 8" 5 to 8% over 10"	Varies: 4" — 10¢/ft 10" — 25¢/ft 18" — 54¢/ft 24" — 84¢/ft	Differential in ¢/ft is 2½ × pipe size	Varies: 4" — 10¢/ft 8" — 20¢/ft 12" — 30¢/ft	5 to 10% conversely with diameter	Varies: 4" — 10¢/ft 8" — 20¢/ft 12" — 30¢/ft
HOW CONTRACTOR PRICES for mechanical joint pipe in place compare with bids on bell-and-spigot	Bit less than B&S with lead joints, same as B&S with sulphur joints	Invariably quote mechanical-joint pipe lower installed	About same as for B&S with lead, usually higher than B&S with sulphur joints	Cheaper than lead joints	Cheaper than lead, higher than cement joints used extensively on West Coast	Bids about the same but B&S sometimes preferred due to long experience	Same as B&S with lead, higher than sulphur joints

Mechanical joints grow in favor with pipe-layers

It's no secret that mechanical joint pipe for water distribution has been growing in popularity. Facts collected in an ENR survey of manufacturers, tabulated above for easy reading, show just how fast and how far this trend has gone, and why. The story that follows indicates in more detail why waterworks men and contractors have gone all out for mechanical joints in much of the country, and why they are less enthusiastic in some parts.

Reasons for the increasing popularity of the bolted joint with rubber gasket are simple: It is easy and fast to make—even in a wet trench—and it is both flexible and tight. Odds against an imperfect joint are so great that the contractor can backfill before running his pressure test; there is real saving in not having to keep a long trench open until after tests.

"Most waterworks people and all contractors" prefer mechanical joints, in the current experience of American Cast Iron Pipe Co. Contractors like being able to lay it with unskilled labor—and in wet trenches.

James B. Clow & Sons finds the majority of waterworks purchasers go for the bolted joint; contractors decidedly prefer it. Lynchburg Foundry finds preference a matter of cost. McWane Cast Iron Pipe Co. reports most waterworks men and contractors want mechanical joints.

On the Pacific Coast it's another story. Pacific States Cast Iron Pipe Co. says that in its cold, mountainous areas mechanical joint pipe runs to 80% of total sales; the reason seems to be greater flexibility and resistance to expansion and contraction because of extreme temperature changes. Along the coast, bell and spigot pipe is used extensively, since inexpensive cement joints are allowed. But even there the mechanical joint is making inroads.

In the San Francisco Bay area as well as around Los Angeles pipe needs to be put only about 3 ft underground; there's no freezing problem. Ground temperatures don't vary much seasonally, so cement-calked joints in bell and spigot pipe are satisfactory.

In Seattle, Wash., local specifications do not yet call for mechanical joint pipe, but reported they are likely to be changed soon to allow such use. On one small recent job, alternate bids were asked. Mechanical joints came in low and got the job. Many water districts around Seattle are using mechanical joints increasingly—largely because the contractors like it and bid it lower, in the ground.

Warren Foundry & Pipe Corp. in New York City evidences the slowest movement toward mechanical joints of all pipe-makers reporting. Its customers "like it very much," but "contractors, in general, are indifferent and go along with the customer." In some cases, this firm finds bell and spigot pipe is preferred by contractors because of the training their men have had in its laying. In spite of this, Warren's sales manager sees a "predominant future" for mechanical joints.

In Philadelphia, the R. D. Wood Co. reports it has not been pushing mechanical joint pipe; demand is increasing of its own accord. Waterworks men seem to favor it; as usual, contractors have their own opinion—some for, some against, says Wood.

Around Washington, D. C., mechanical joints have gained in experience and popularity.

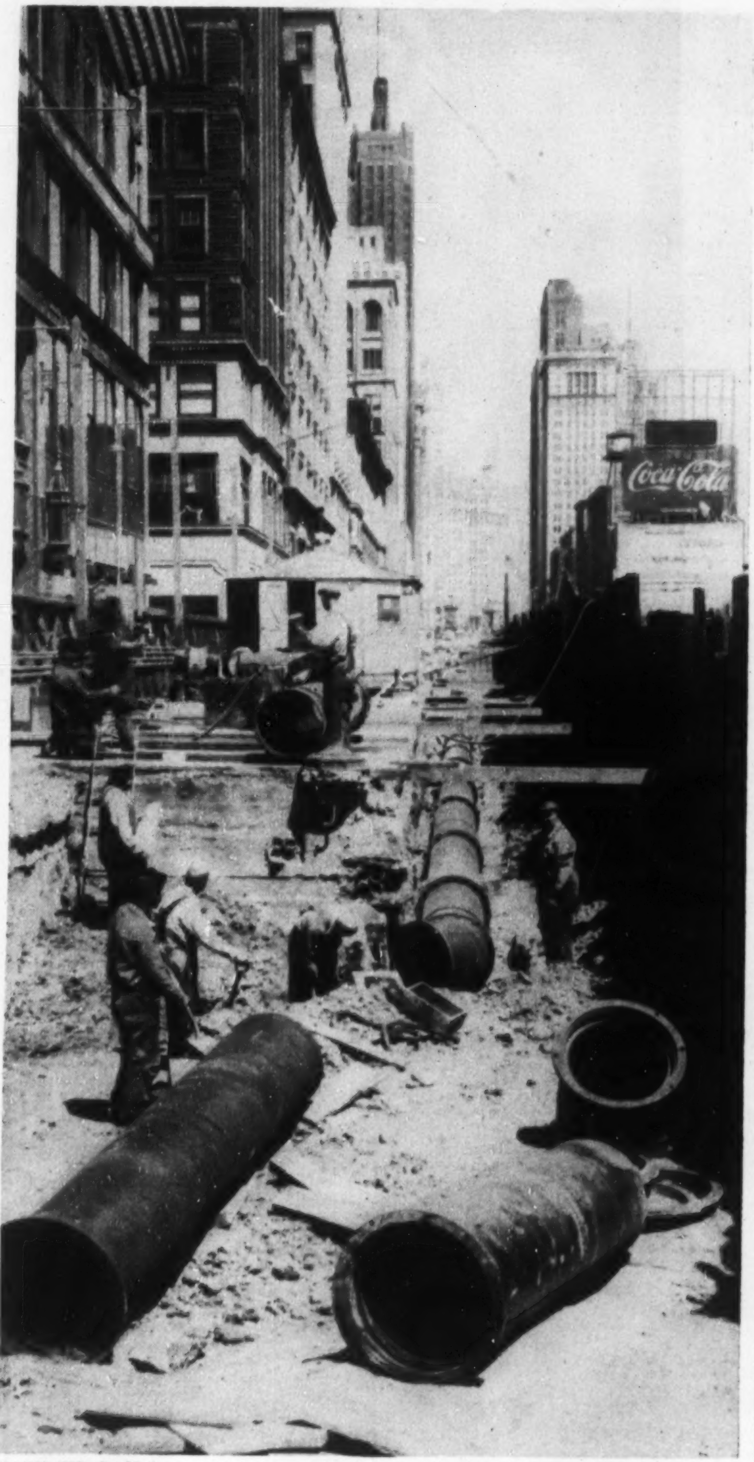
J. E. Farrell, construction engineer of the Washington Suburban Sanitary Commission, has reported on 3½ years experience which has led to almost exclusive use. The "hot pot" and the "hot pot man" are eliminated. Ability to work these joints in the wet has been found of special importance when adding new mains to an existing system—always a sloppy situation.

Sterlization of mechanical joints before use has been found to be virtually as effective as for bell-and-spigot.

Bell-and-spigot is preferred by Mr. Farrell where a number of fittings are to be used together and proper selection of fittings might eliminate need for nipples. But, in general, he prefers the mechanical joints—and so have contractors on 56 WSSC jobs.

Roy L. Orndorff, superintendent of the office of planning, design and engineering in the C.C. department of sanitary engineering, reported at a regional AWWA meeting last fall that 8-in. mechanical joint pipe has been standard since 1949 in the district. There are now well over a quarter-million feet of it installed there. Mr. Orndorff cautioned that these joints are not foolproof: bolts have been left out or left loose; gaskets have been omitted. As a final advantage, he pointed out instances where pipe was laid on fills not completely consolidated, on which bell and spigot pipe should never be laid. Flexibility of the rubber gasketed joints made this possible.

All mechanical joints made by the above manufacturers and other mem-



EASY TO LAY because joints are simple—even in the 24-in. size on this Chicago reconstruction job.

bers of the Cast-Iron Pipe Research Associations are made to exactly the same dimensions. American Standard Specifications have been written and printed (AWWA C111-53). Life of the rubber gasket is practically unlimited. Synthetic rubber is reportedly as good when used for this purpose.

Thomas F. Wolfe, managing director of the Cast Iron Pipe Research Association, Chicago, says 25 years use shows mechanical joint pipe to be "the perfect pipe for underground construction."

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LeRoy L. Werner, architect
Beall & LeMay, structural engineers

Case history
of CECO on-the-job
performance

Planning makes entire building site income-producing. Ceco cuts dead load in floor system.

A tenant in the Cafritz Building, Washington, D.C., has no parking problems. He just drives to his floor—even if it's 10 stories up—parks, steps into the corridor—then into his office.

Morris Cafritz, building owner, has reason to be happy, too: his whole land plot produces income. When planning the building, the problem confronting him and architect LeRoy L. Werner was . . . how to eliminate areas of no income on the plot. Windowless space won't rent . . . court design means waste areas. The solution: a square building with a garage in the core, with a ramp spiraling 10 floors up. Thus layout design made all the land rent-producing. And structural design kept the floor system light and economical. This was accomplished with Ceco-Meyer Steelform Concrete Joist Construction. But let architect Werner tell the story:

"I know of no other floor framing that would have been more suitable for this job," Mr. Werner said. "Structural engineers Beall & LeMay designed panels of the building for various types of concrete systems, including joists with tile filler, beam and slab construction, and flat plate construction. They found that reinforced concrete joist construction formed with Removable Steelforms offered savings in floor weight of 40% compared to flat plate construction."

When you plan your next project call Ceco product specialists. They will help you save through product engineering. Consult Sweet's File for address. CECO

Ceco-Meyer Steelform construction saves steel, concrete, lumber and labor

Steelforms are quickly installed on simple open wood centering. In most areas, Ceco's own erection crews are available for placing and removing the centering and forms. Cost is reduced because the same lumber and steelforms are re-used from floor to floor.

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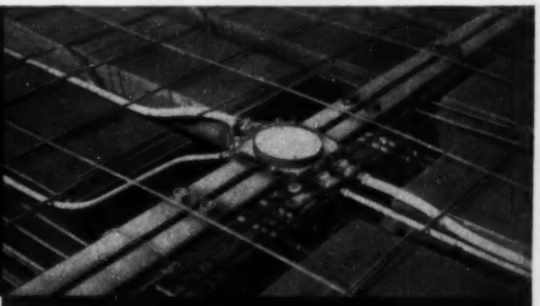
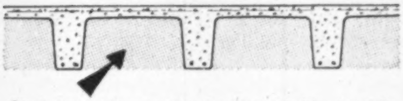


Ceco-Meyer Steelform Construction permits placement of underfloor ducts for electrical outlets spaced as needed for a modern office building. Note how the duct system is easily carried in the joist construction. Result: the most economical electrified floor.

Why Concrete Joist Construction Saves Material



Shaded portions show concrete eliminated by concrete joist construction.

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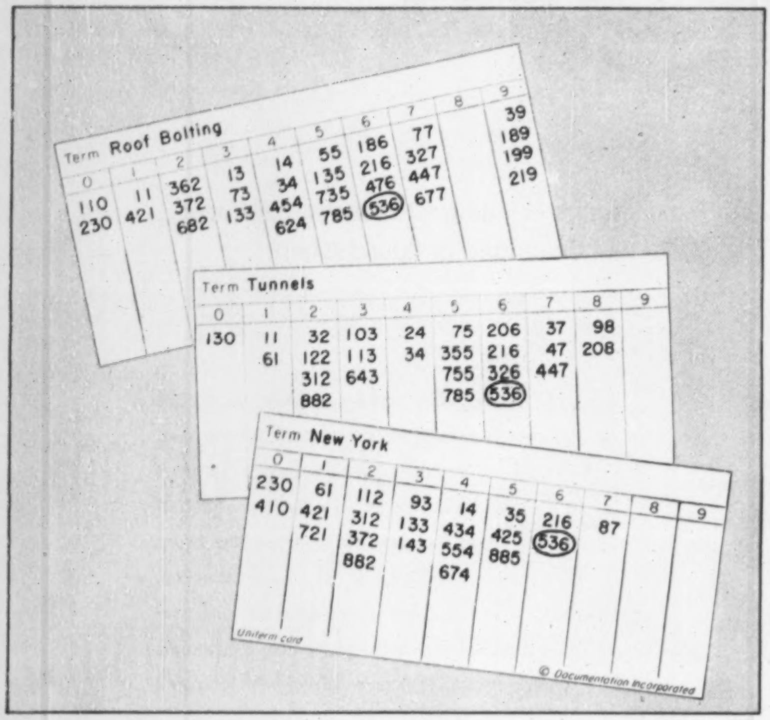


Term **Roof Bolting**

0	1	2	3	4	5	6	7	8	9
110 230	11 421	362 372 682	13 73 133	14 34 454 624	55 135 735 785	186 216 476 536	77 327 447 677		39 189 199 219

Term **Tunnels**

0	1	2	3	4	5	6	7	8	9
130	11 61	32 122 312 882	103 113 643	24 34	75 355 755 785	206 216 326 536	37 47 447	98 208	

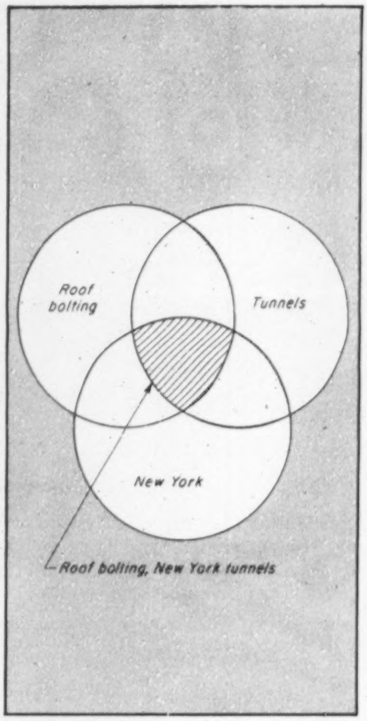
Term **New York**

0	1	2	3	4	5	6	7	8	9
230 410	61 421 721	112 312 372 882	93 133 143	14 434 554 674	35 425 885	216 536	87		

Uniterm card

© Documentation Incorporated

CARDS LIKE THIS, with simple headings, numbers arranged in ascending order according to last digit can be . . .



COMBINED LIKE THIS, in order to bring together key words, to . . .

How to find what you need

Here's an indexing system that anyone can use to keep track of information tucked into the files

Many an engineer and many a contractor—faced with the problem of usefully filing some of the flood of technical and business information that pours across his desk each day; and of filing plans, prints and calculation methods—has been forced to fall back on memory or the files of outside organizations because of the impossibility of reaching a reasonable solution for himself.

But the U. S. government—itself probably the world's biggest gatherer of information on everything and anything—may have come up with the answer to the key problem: Retrieving information, once it has been filed.

A private contractor working with the Armed Services Technical Information Agency (ASTIA) has developed a seemingly simple answer.

The system's name: Uniterm. Its inventor: Documentation, Inc., of Washington, D. C. Its applications: Apparently endless. Its cost: Small.

"Uniterm" can be handled either manually (for most library indexes) or mechanically (for a really vast library); seems to require little special training for the indexer; makes use of one-word terms, simple numbers.

• **Genesis**—Up to the beginning of World War II, the problem of keeping track of government research information was annoying enough—but not too difficult by conventional methods. Most research by the armed forces was on a relatively restricted scale, confined largely to a few governmental installations, some educational institutions and laboratories.

But with the start of the war, governmental research expanded swiftly and enormously on many fronts. This took the form of spreading research contracts to innumerable laboratories, business organizations, schools, all over the United States and its possessions, and even in foreign countries.

Result was an ever-growing flood of uncorrelatable information.

To cope with this inundation, the Defense Department two years ago set up ASTIA (as a successor to earlier agencies) and charged it with the colossal task of finding out which of the three major branches of the armed services had information on what, classifying what was available, and making it possible for other branches of the government—and subsequently for private industry—to find out what data had been so carefully stored away.

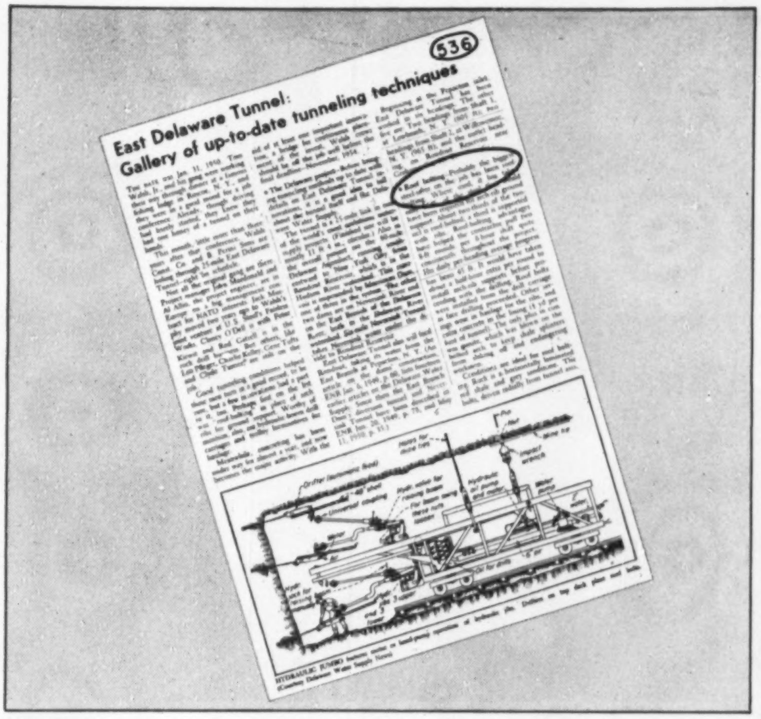
At the head of ASTIA, the department named Leslie E. Neville, formerly editor in chief of McGraw-Hill's one time AVIATION MAGAZINE, and more recently an executive of the Aeronautical Research Foundation.

Neville ran head on into a fantastic situation. Within months he had collected documents (or information on documents) running into the hundreds of thousands.

What seemed necessary was some kind of an index to the index, and a large staff of researchers, until ASTIA came across Dr. Mortimer Taube—and with him Documentation, Inc., and "Uniterm".

• **Unconventional expert**—Dark, slim, nervously energetic, Taube is no stranger to the problems of research. A graduate (in education) of Rutgers University, holder of a PhD (in philosophy) from the University of California at Berkeley, he had worked through the war years with the Technical Information Center of the Library of Congress, left there to become chief of the Technical Information Service of the Atomic Energy Commission.

When ASTIA's problems became known, Taube went to Neville with a proposal to evolve a workable system. And on the strength of a $35,000-contract, he organized Documentation, Inc., and went to work.



536

East Delaware Tunnel:
Gallery of up-to-date tunneling techniques

PRODUCE INFORMATION LIKE THIS from any filing system, quickly, accurately, and easily, under a newly developed indexing system.

• **Not to bury Caesar**—"We decided," says Taube, "to discard any conventional indexing practices, and approach the problem from what we think is the most important point of view: That of the man who wants something from the library.

"The most important question then is simple enough—retrievability. The user isn't at all concerned with how the material is stored, or how the library catalogues it. He wants only facts—and he wants them fast."

Taube and his group now added some other facts: (1) The human eye can work faster than a machine at inspecting, say, numbers, if the numbers are arranged in ascending order; (2) Single basic English words can be combined into endless meanings by simply putting them together in varying order.

With these facts, Documentation went to work, and evolved a system so simple and so logical that one librarian has said it is the starting point for a revolution in the library art.

It was a startlingly simple result ("Believe me, not easily arrived at," comments Taube) that combines single words, consecutively numbered documents, 3 x 5 cards and the human eye into an indexing system that apparently can be used to file anything and everything—photographs, blueprints, reports, newspaper clippings—and can be made to produce at one stroke all connected information on a subject, not merely a single document.

• **How it works**—Here's how "Uniterm" works:

An article is referred to the library, its general subject being, say, a description of tunneling work on New York's Delaware Aqueduct.

The librarian simply stamps the document with the number next up on an ordinary numbering stamp. The number itself has no meaning, other than for identification. Assume the number to be 536.

Next step is for the librarian to glance through the article, picking out of it any and all subject headings that he can find and describe in a single word or phrase. In this case, such headings might be many: Tunneling, Water Supply, Delaware River, New York City, Roof Bolting, Drilling, Tunnel Lining, Concreting, etc.

Then to the cards. Each card (see illustration) is arranged in ten columns (0 to 9), and has a blank space at the top for entry of the word or phrase (as Roof Bolting) for identification. The librarian then makes out a single card for each heading he has selected, and in the proper column (according to the last digit—in this case "6") enters the number "536" on each card.

As each succeeding document, article, picture, blueprint is forwarded to the library, it will be numbered similarly and entered on cards. As the files build up, some of the same cards will be used to identify other articles on similar subjects or with additional information—each document number being entered on the card in ascending order, in its proper column.

• **Now to find it**—Assume now that a staff engineer needs some information on roof bolting. He cannot remember the title of any article on the subject—in fact he need not even know whether such an article was printed anywhere. (Let's suppose, further, that the title of the filed article said nothing at all about roof bolting.)

But the engineer does not need to know this. He needs only to ask the librarian for anything on roof bolting in tunnels.

The latter needs only to extract from his file the two cards headed "Tunnels" and "Roof Bolting", and by simple comparison can see quickly that the number "536" (perhaps among others) appears on both cards. That article must, therefore, be the one wanted. If the engineer happens to remember more—say that the tunnel he's looking for probably had something to do with New York City—the librarian can produce still a third card and narrow the choice still further.

• **Advantages**—"Uniterm" (because it uses single words for headings) has a number of obvious advantages:

1. It does not require elaborate mechanical equipment;

2. It puts no burden of decision on the indexer as to where the item should be filed according to any rigid or established system of headings and subheadings;

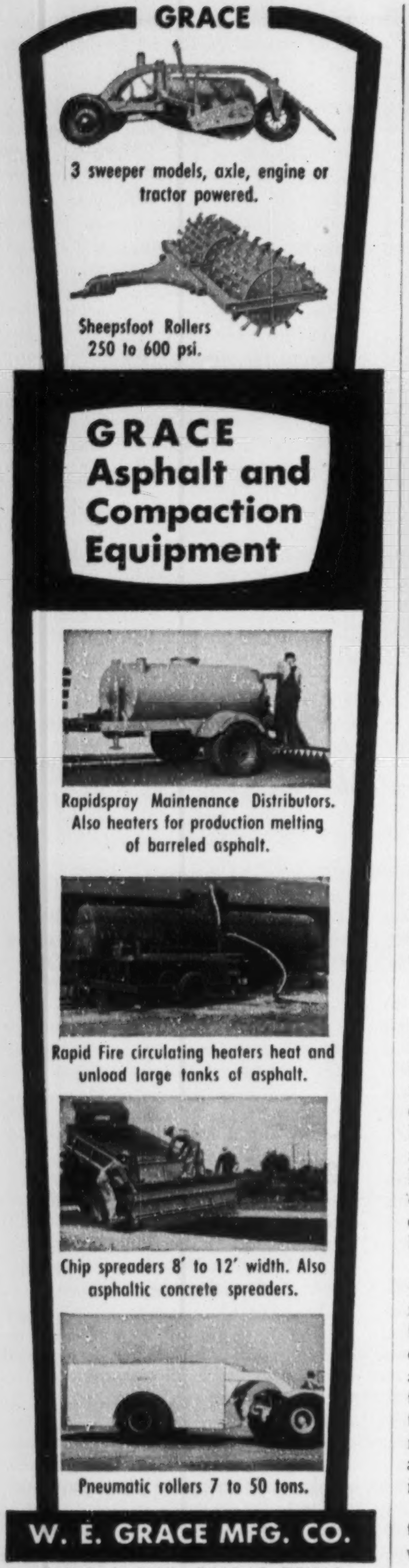
3. The same card and numbering system can be used to provide quick access to any number of differing items that might relate to the same subject (as photos, technical papers, blueprints, magazine articles, memorandums);

4. Because of the flexibility of the possible combinations of single words, a searcher can enter the index from literally any point, with the sketchiest of initial information—and still come up with the information he needs.

As to complication: ASTIA's librarians developed more than 50,000 headings and subheadings for 78,000 documents—but "Uniterm" has only 3,000 subject headings.

As to work: Documentation and ASTIA now are running parallel indexing trials. ASTIA has six trained librarians at work, Documentation has two, who are said to be working as fast as ASTIA's six.

"Uniterm," of course, is not a cataloguing system. If the user merely needs an inventory of what's on hand, a simple list by titles will do. But if the user wants to know what information is included in his inventory—Uniterm might be the answer.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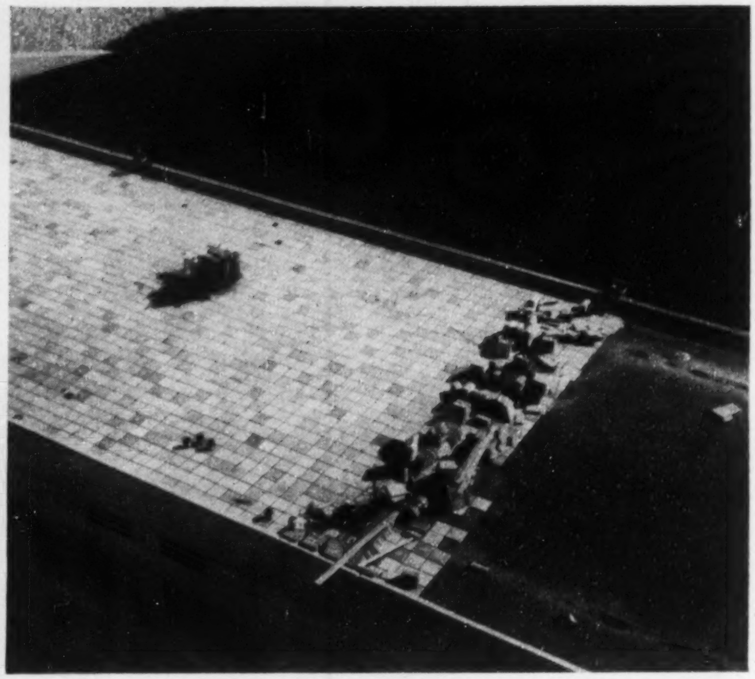
CONCRETE TILE covers the powerhouse roof at Clark Hill Dam in Georgia. Joints were filled with a sealing compound by machine without marring the surface.

Quick, clean filling of tile joints

When joint sealing compounds are used, there is always the problem of preventing them from getting onto adjacent surfaces, necessitating expensive cleaning up operations. A satisfactory solution was worked out for the tile roof of the powerhouse at Clark Hill Dam, near Augusta, Ga.

Precast concrete tiles were laid directly over built up roofing, with joints aligned and of equal width. When the tile was properly positioned, joints were filled with Flintseal, a hot-poured rubberized sealing compound manufactured by The Flintkote Co. A quick, clean job was accomplished with a "165" melting kettle and model RJ mechanical applicator for rubber-asphalt joint sealing compounds—equipment manufactured by Joint Equipment Co.

• **Quick melting**—The kettle is an indirect-fired, double-boiler, oil-bath type. Of rugged, welded steel frame construction, it is spring-mounted on a heavy-duty, two-wheel, pneumatic-tired chassis, for mobility. Capacity of the inner tank, or material chamber, is 165 gal. For quick melting and to avoid splatter, material was fed into it in thin slabs.

High-flashpoint oil, used as a heat-transfer medium in the outer jacket, was heated with bottle gas. Thermostatically controlled burners provided quick initial heating of the oil bath, enabling the sealing compound to be melted much faster than by older methods. Conveniently mounted thermometers indicated temperatures of oil bath and compound.

• **Flow carefully controlled**—Melted material was discharged through a valve that was heated to prevent clogging. This valve was mounted sufficiently high for easy discharge into the applicator or pouring pot. The metal well of the applicator was kept at least half full while filling the joints, for better control of flow.

A shoe for feeding the filler is attached to the well. It was placed over a tile joint and in contact with the tile surface. With a little practice the operator soon learned to control flow into the shoe with a hand-operated valve and to fill joints without excess material flowing over or under the shoe. Joints were filled in stages, sometimes in as many as three.

Care was taken in lifting the shoe from the tile when moving from one joint to another, to avoid spillage. Also, short boards were laid down to pass the applicator over joints previously filled. After the first few days, satisfactory results were obtained and negligible spillage occurred outside the joints.

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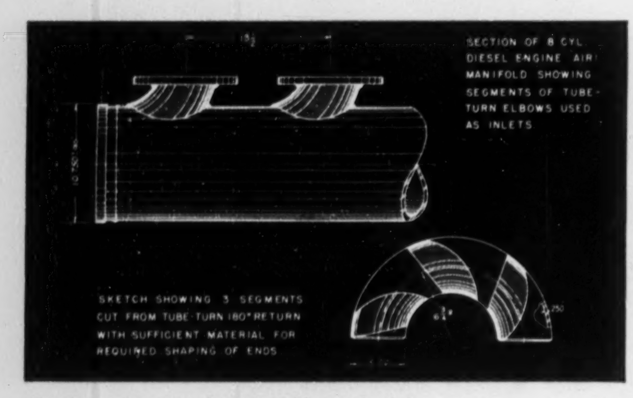
SECTION OF 8 CYL. DIESEL ENGINE AIR MANIFOLD SHOWING SEGMENTS OF TUBE-TURN ELBOWS USED AS INLETS
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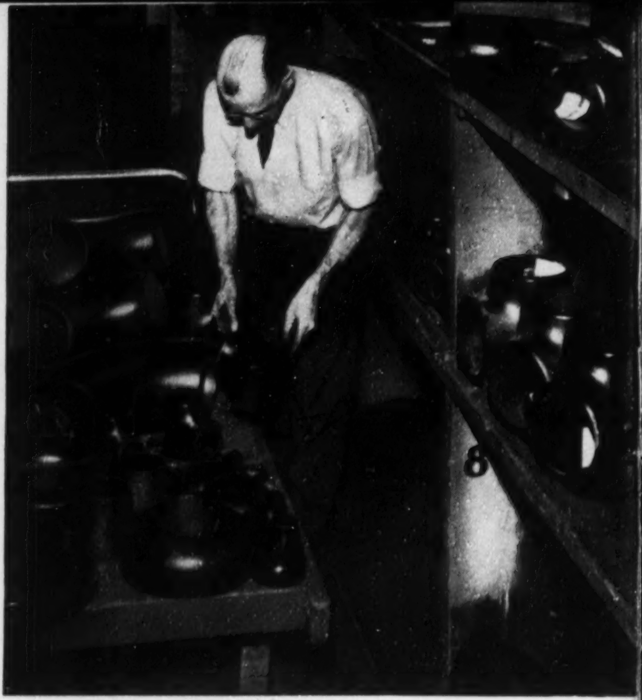

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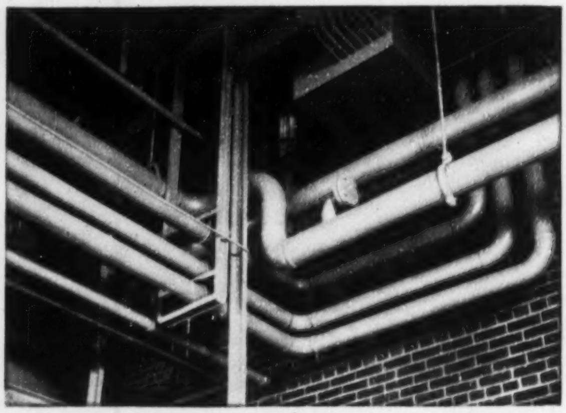

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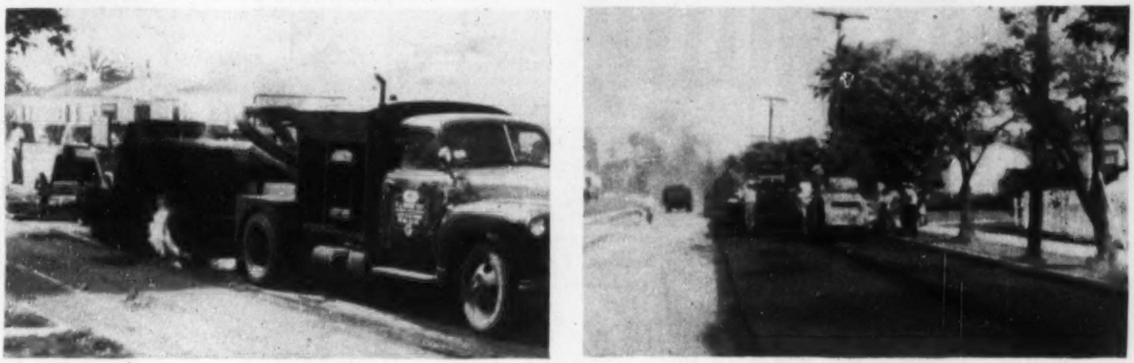


CONTINUOUS OPERATION—Truck, burner and scarifier make up the lead unit, followed by oil truck, paver and roller.

Job-developed scarifier a big help—roads are heated, dragged and repaved

Searching for a low-cost method of resurfacing roads in their city, W. E. Kennedy, director of public works of Inglewood, Calif., and his assistant, W. E. Peebles, decided to use the heating-scarifying-top dressing method.

While not a revolutionary departure from similar methods used (ENR Jan. 10, 1952, p. 41), the city—with a valuable assist by the G. J. Payne Co., of Los Angeles—has been renewing pavement at a rate of 60,000 to 80,000 sq ft per day.

• **Preparation**—Emphasizing the importance of a sound base in the existing pavement, the engineers have found that other defects such as raveling, cracking, disintegration or surface failures can be neglected, for this method remedies that type of failure in all but extreme cases.

The street must be cleared of weeds in cracks and borders—this is done both manually and with a weed killer a few days prior to resurfacing.

The edge of the pavement usually is bladed ½ in. deep to obtain a good bond with concrete gutters.

A three or four-man crew can complete one average block per day even under excessively weeded conditions.

• **Resurfacing**—Resurfacing is accomplished in four continuous operations depending upon traffic conditions.

The first pass is made with a pavement burner (at 2,200 F.) that tows a pavement scarifier along behind it.

• **The scarifier**—Devised by the Payne company, the drag is about nine feet wide. It is a four-wheel buggy with a series of bars attached to a suspended A-frame. Twentypenny spikes are attached to the bars on two-in. centers.

Payne, in business for himself for eight years (after fifteen years with Los Angeles engineering and street maintenance) had developed the scarifier for his own use over a period of two years. At present, he has no patent or manufacturing plans, but is considering it as a result of the wide interest shown in the equipment on every job where it has appeared. The type of existing pavement and the heat determine the depth of penetration of the spikes. However, it has been found that average penetration is half an inch.

Kennedy points out that even with weights, low points in the pavement are missed. He is convinced, however, that the burning operation revitalizes the existing pavement oil, thus furnishing an adequate bond in the low spots.

Following the burner-scarifier on the hot pavement is a truck that applies a tack coat of SS-2 (Asphalt Institute Spec) at a rate of 0.10 gal per sq yd, and immediately following this operation is the pavement layer adjusted to apply about 10 pounds per sq ft (one inch thick) of pavement.

Finally, the new pavement is rolled.

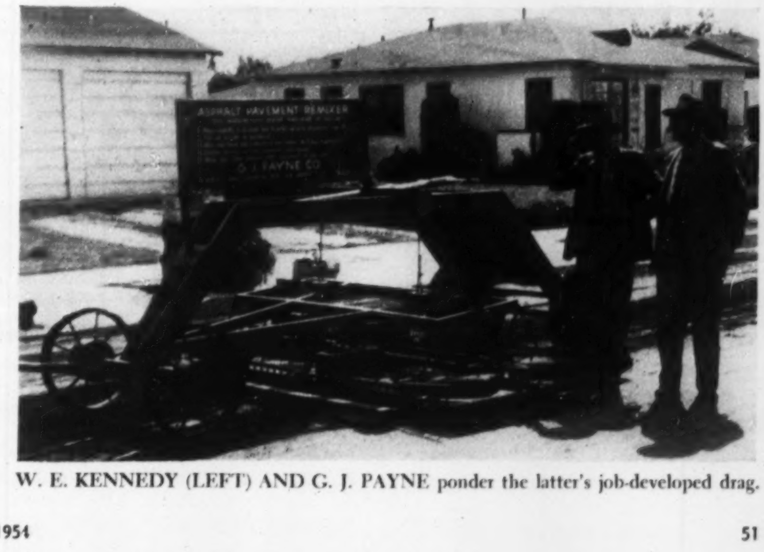
• **Pavement specifications**—Paving mix called for is a ¾-in. maximum aggregate with 5%-7% of the following: 80-100, 150-200 paving asphalt or SC-6 oil.

The slow-curing oil is being used on major streets with high traffic volumes.

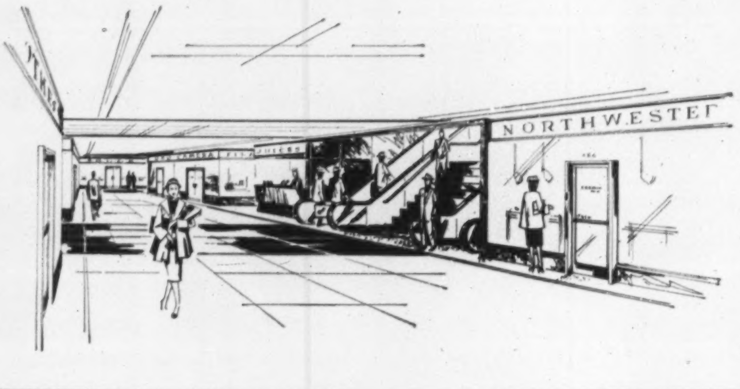
According to Kennedy, they have found the method to have many advantages—low cost, ease of preparation, excellent bond to existing surfaces—and in addition, the dense mix gives an excellent water repellent surface.

The paving (including all operations) is let by yearly contract on a sq ft basis. Current cost to the city of Inglewood is 4½ cents per sq ft.

(*Municipal continued on page 52*)



W. E. KENNEDY (LEFT) AND G. J. PAYNE ponder the latter's job-developed drag.



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Railroad shopping center

Rail terminal to tap commuter market with shopping center on main floor and consolidation of services

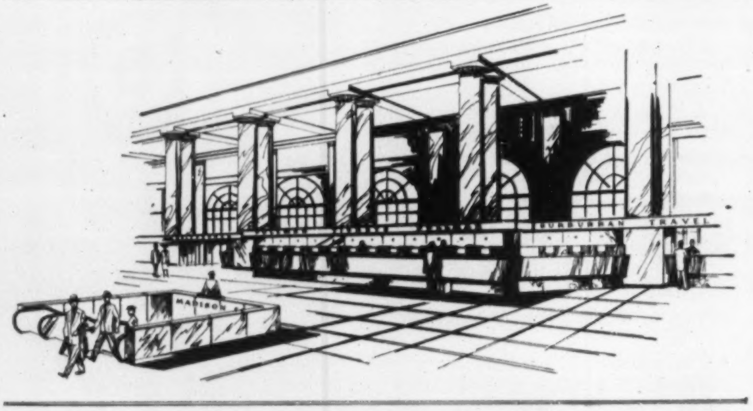
Improved terminal service is in store for Chicago, Ill., commuters of the Chicago & North Western Rwy. Co.—as well as for its cross-country passengers. Remodeling will get under way this month to convert the entire street-level floor of the passenger terminal into a shopping center. The station is located on West Madison, between Canal and Clinton streets.

In addition to the creation of terminal shopping facilities, the program calls for the construction of new ticket offices and other facilities on the second floor, the area which will be enlarged to accommodate all passenger service facilities. Escalators will be installed between the first floor (street level) and second floor.

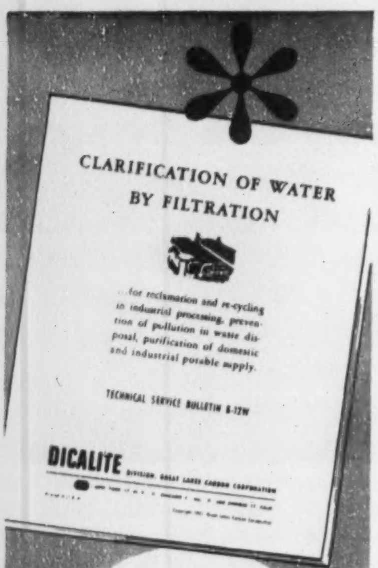
There are two chief reasons for C&NW's modernization and remodeling program: More efficient service through centralization of passenger facilities on the train-level floor, and the potential market represented by about 95,000 persons passing through the terminal daily forming a lucrative pool of consumer-purchasers for the shops and stores to be installed on the ground floor level.

More than 25,000 sq ft of space—exclusive of aisle areas—will be made available for leasing to business firms to form the shopping center. Although plans for occupancy have not been completed, probably they will include such facilities as a delicatessen, meat

(*Continued on page 56*)



PASSENGER SERVICES—now embracing four floors—will occupy second floor only.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...for reclamation and re-cycling in industrial processing, prevention of pollution in waste disposal, purification of domestic and industrial potable supply.

TECHNICAL SERVICE BULLETIN B-12W

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NYLON in the U. S. Royal Con-Trak-Tor helps you through the heavy going—*keeps you on schedule!*

NYLON...Keeps Pay Loads Moving!

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The Con-Trak-Tor's Nylon cord body withstands murderous impact . . . means that you get every hour of tire life built into this great U. S. Royal tire.

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The Con-Trak-Tor's full-width lug design digs deeper, pulls harder in forward or reverse—actually works where other tires stall.

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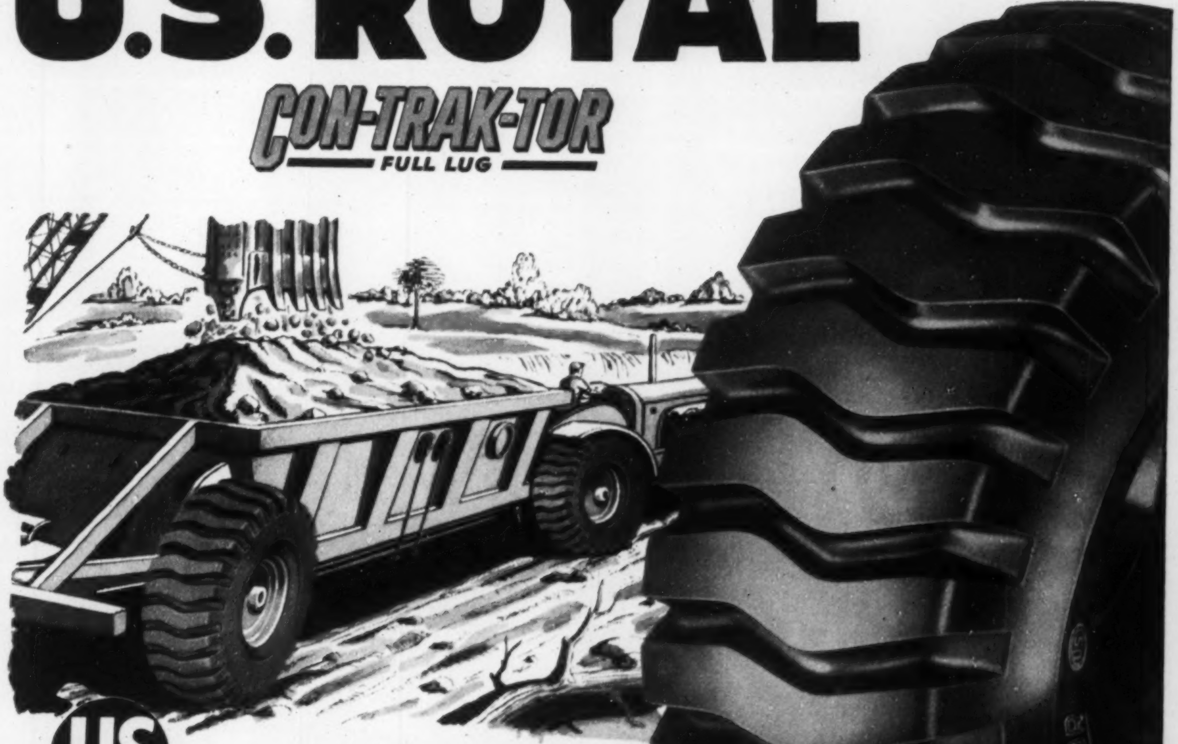


UNITED STATES RUBBER COMPANY

800 tons of lift span . . . moved by a single 135-hp motor

Widening the Cuyahoga River at the Cleveland entrance to the Great Lakes has necessitated 15 new bridges like the one shown here.

Erected for the New York Central Railroad, it has a 250-foot lift span—double the length of the bridge it replaced. And span weight has also increased materially, along with engineering problems.

Called into the project early, a Westinghouse team worked closely with the consulting engineers, in Kansas City, and later with the general and electrical contractors of Cleveland. A special control system—devised by the consulting engineers—was designed for tower drive operation. It utilizes weight counterbalances so precisely that one 135-hp, 230-volt d-c Westinghouse motor moves the 800-ton span.

The same Westinghouse team coordinated delivery of 12 different product groups and offered specialized application assistance when needed.

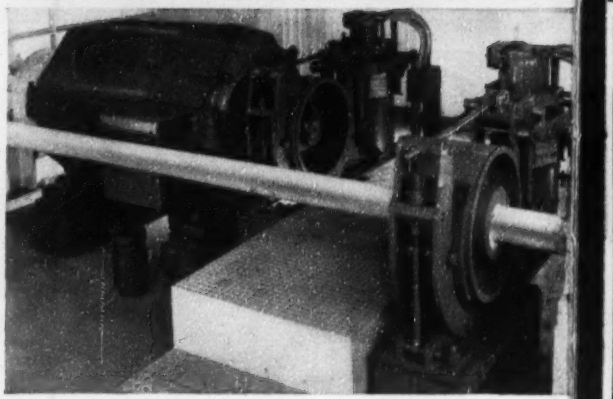
This is another instance of the coordinated services Westinghouse offers the construction industry. From original engineering assistance . . . through product selection, delivery and application, Westinghouse teams work closely with you.

The construction application engineer in your nearest Westinghouse office is the key. One call to him will bring a team. Westinghouse Electric Corporation, 3 Gateway Center, P. O. Box 868, Pittsburgh 30, Pa. J-94020

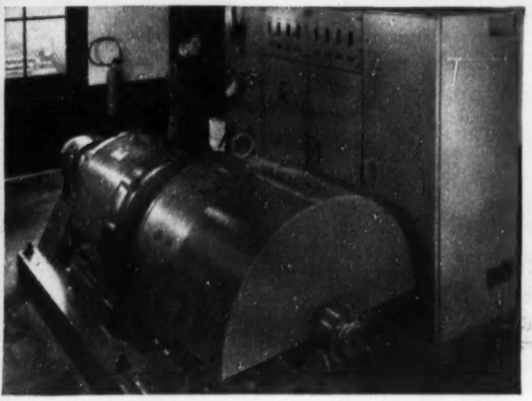
New York Central Railroad Bridge No. 8, Cleveland, O., has a 250′ lift span—twice as long as the one it replaced. Span moves 1′ a second to a height of 90′. Towers are 159′ high. Consultant: Howard, Needles, Tammen & Bergendoff, Kansas City, Mo., New York, N. Y., Cleveland, O. Erected by: McDowell Company, Inc., Cleveland, O. Electrical Contractor: The Dingle-Clark Co., Cleveland, O.

YOU CAN BE **SURE**... IF IT'S

Westinghouse



Westinghouse 135-hp, 230-volt d-c motor, background, operates from bridge center in conjunction with counterweights to move the 800-ton lift span. Brake control, foreground, stops the span at any position.



Westinghouse generator set, foreground, generates d-c power—150 kilowatts at 230 volts—to operate drive motor in center of bridge. Directly behind the generator set: control switchboard.

Westinghouse control desk gives operator complete and centralized control of all operating functions. It automatically slows lift span a short distance from bridge top or bottom, then inches it into place.

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market, bakery, gift shop, book store, men's store, women's ready-to-wear shop, prescription druggist, and other small establishments.

• **Two stages**—Remodeling operations will be conducted in two stages. Stage 1, to be started this month, has these five main points:

1. Add 3,000 sq ft of area to the second floor by extending it over the Madison St. stairwell to the front of the building.
2. Remove ticket offices from street level floor and construct modern ticket offices, a reservation bureau, telephone information center and travel bureau as one physical unit along the south end of the main waiting room on the second floor. At present these facilities are on four different floors of the terminal building.
3. Move the baggage checking office from the street-level floor to the second floor over the present Canal St. stairway.
4. Replace these stairs with modern escalators; increasing the first floor lobby area at that location which adjoins taxi ramps and access to Canal St.
5. Remodel the northeast end of the main waiting room to provide open access to building elevators and the new baggage-checking office.

• **Second stage**—Chief points of the second-stage remodeling, to take place next year, are:

1. Convert the present grand staircase connecting the first two floors with two escalators, and a walk-up flight opening into the second floor waiting room rather than into the train concourse as at present.
2. Install electric-eye devices for automatic operation of doors leading into the concourse at head of stairs.
3. Install a double-faced modern trainboard that can be viewed either from the waiting room or from the train concourse.
4. Remodel and modernize the rest-room facilities.

The remodeling project, which may cost in the neighborhood of $500,000 was designed by Harper Richards, Chicago architect and engineer.

After ten years of lethargy Nashville wakes and builds

For ten years, the city of Nashville, Tenn., lumbered along attempting to suit prewar planning and administration to a racing postwar economy. Recent events, however, have brought city leaders up sharply:

They've been told that in the next five years, Nashville must telescope an expansion that other cities have taken 25 years to complete.

Last June a joint city-county program for expanding the scope of long range planning for urban Nashville was announced as substantially complete by the Greater Nashville Committee of the Chamber of Commerce. The creation of a planning service department and a plans and research department was announced.

• **Suburbs need service**—Said Wilbur F. Creighton, Jr., of the Nashville Chamber of Commerce:

"During the last ten years, our planning commissions and their limited staffs have had neither time nor funds for long-range planning.

"Where other cities have annexed outlying areas from time to time and were able to assimilate those areas into the overall municipal pattern, Nashville has refrained from annexation and is thus confronted with the need for providing services for a vast, densely populated suburban area.

"The problem has reached staggering proportions. Since 1940, about 65% of the building permits were outside city limits. The assessed valuation of real estate in the suburban area climbed from 30% of the county total in 1933 to 55% in 1953."

At present steps toward relieving the static condition of Nashville are being taken in several directions.

• **Industrial development**—The loss by Nashville of the Crane Company's $25-million proposed titanium plant—it went to Chattanooga instead—inspired a stepup in the city's industrial expansion program.

Nashville, second largest of Tennessee's big four—Memphis, Nashville, Chattanooga and Knoxville—trailed all but the latter in new and expanded plants during the postwar period.

An advisory board composed of representatives of all phases of the city's economy (city and county governments, utilities, transportation, financial institutions, real estate, the Chamber of Commerce, labor and other elements was advocated to make sure that in the future Nashville would

(*Continued on page* 58)

Deep Dewatering by Moretrench

project Foundations for two of the country's largest forging presses — Air Force-Wyman-Gordon Company Project, North Grafton, Mass.

Press designers and builders: Loewy-Hydropress, Inc., New York

General Contractors: Gilbane Building Company, Providence, R. I.

problem To excavate to rock (a depth of over one hundred feet) in wet silty sand, clay, and gravel without damaging existing structures adjacent to the excavation.

solution MORETRENCH WELLPOINT EQUIPMENT, installed in stages, lowered ground water to rock, stabilized the soil, enabled the contractors to excavate in the dry, eliminated sheeting except for deepest pits.

A difficult job which required expert planning and expert execution was safely and efficiently accomplished.

This and other interesting projects are featured in our new 1954 catalogue. Write for your copy to: 140 Cedar Street, New York 6, N. Y.

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A Picture Story of KERRIGAN

be the town that "got there first with the most" in the contest for new plants.

• **Transportation-industrial**—In the middle of a rehabilitation project aimed at "healing" the city's downtown "railroad gulch", two railway companies are pushing a program that may exceed $100 million in invested capital.

The Nashville, Chattanooga & St. Louis Railway, and the Louisville & Nashville Railroad have almost completed the $14-million construction of the Radnor receiving, classification and dispatching yards at the city outskirts.

As soon as the freight switching operation can be transferred to the new yards—some time in mid-summer—the "gulch" network of switch tracks that currently chokes off the city's business district will go under the wrecking bar, according to Alfred James, Jr., superintendent of Nashville Terminals.

The "gulch," a 36-acre tract at depressed level, will be bridged over, allowing commercial and light industrial development both at ground and street (viaduct) levels. Twelve acres of passage tracks also will be covered and made available for development at viaduct level.

• **Housing redevelopment**—It has been announced by the Nashville Housing Authority, that all land should be acquired and all buildings demolished in the Capitol Hill redevelopment in the city by the end of this year.

A report, NHA's 13th, also outlined other improvements and accomplishments of the agency during 1953.

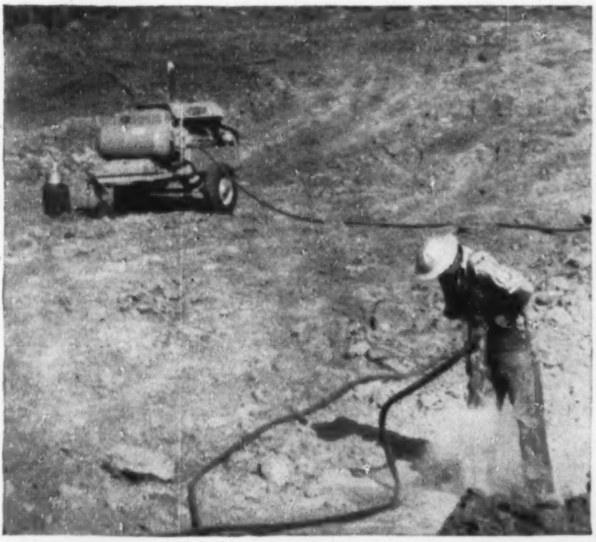
Demolition to make way for the multi-million dollar Capitol Hill project began Nov. 6, 1953, and it is anticipated that construction of the new improvements in the area will be under way "early in 1954."

All told, the authority said, the housing project and its appurtenances will represent a public outlay of $25,177,000—said to be the most ambitious single public improvement undertaken in Nashville's history—and this sum, according to the authority, includes;

- $7,810,800 for the project itself;
- $12,364,900 state expenditure to improve the Capitol grounds;
- $3,501,600 for Victory Memorial Bridge;
- $1,500,000 for a connection between Union and Church streets.

The authority also reported that its low-rent housing units in the city have produced more than double in tax equivalents the amount produced by the replaced slum property.

(*Continued on page 61*)



30% to 40% faster drilling: D. C. Toye Company's 7500 cu. yd. foundation excavation for Willamette View Manor near Milwaukie, Oregon, included 3500 yds. of basalt rock. Blasts had to be kept small because of nearby hospital. 6′ to 8′ holes were drilled on 4′ to 6′ centers with a 55 lb. sinker. *By using a Jaeger Model 125 compressor, instead of a 105, drilling was completed 30% to 40% faster.*

80 yds. of rock per hour per drill: With 10 wagon drills, H. W. Holt & Son averaged 16,000 cu. yds. of rock excavation per 20-hour day on West Virginia Turnpike. A "600" compressor behind each pair of drills kept them at the required top speed. No excavating contractor, today, would buy a 500 ft. compressor for such work. *The other "old standard" sizes of 60, 105, 160, 210 and 315 ft. are on the way out for similar reasons.*

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Jaeger gives you 15% to 25% more air

The difference between a "new standard" Jaeger and others is 15% to 25% more air for your money — 75 ft. instead of 60, 125 ft. instead of 105, and larger sizes comparable.

On the job that additional air often means full pressure instead of mere 70 lbs. pressure at the tools, directly increasing work output 30% to 40%.

Jaeger "Air Plus" compressors have been delivering these higher volumes for years, at moderate temperatures, with notably low fuel consumption, and we believe, the lowest cost of upkeep of any compressors.

Now, when cost-savings are so important, ask your Jaeger distributor to show what he can save you on air and air tool operation — or send for Catalog JC-1.

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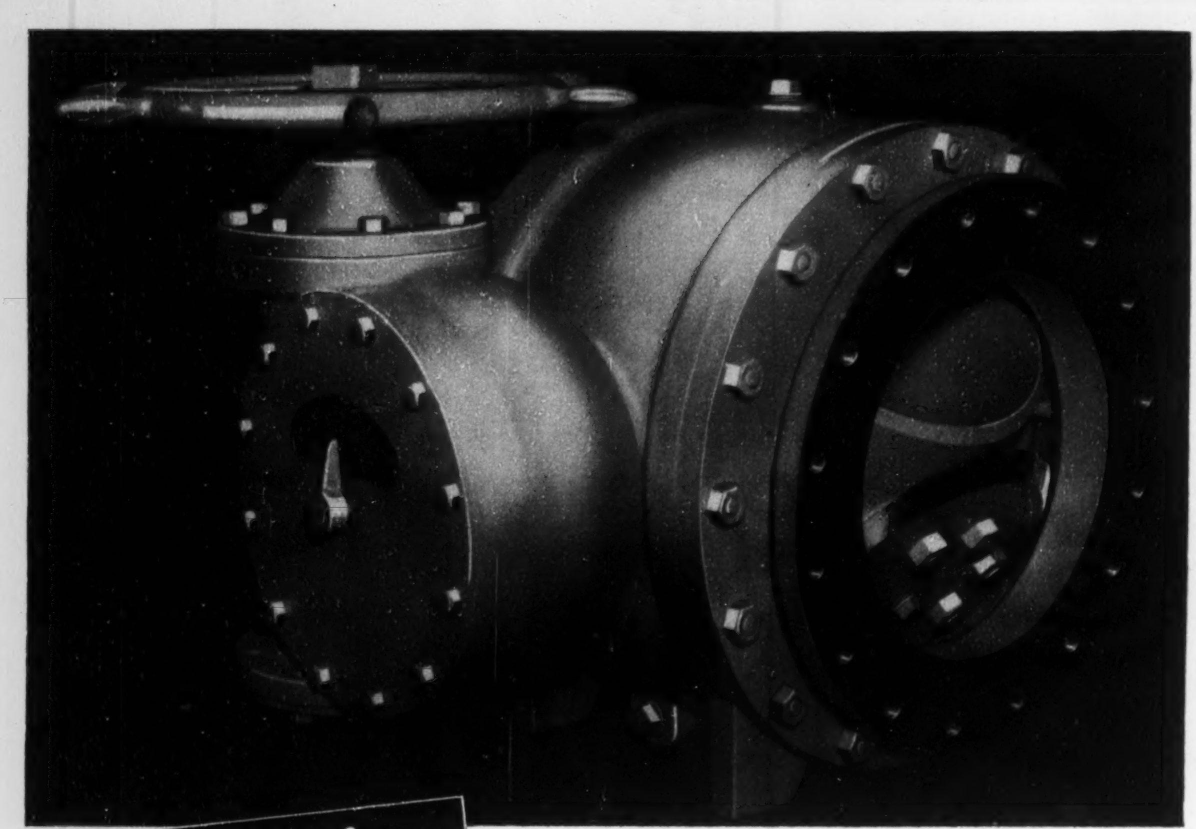

A New Valve by SMITH

THE S. MORGAN SMITH COMPANY introduces the

SMITH BALL VALVE! The first showing will be at the American Water Works Association Convention in Seattle, May 23–28, 1954!

The type and design of this Ball Valve have been proven by performance in many installations.

Be sure to see our Representatives at Booths 146-149 at the Convention, or write us direct for data on the Smith Complete Line of Valves.

S. MORGAN SMITH Co.
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"Taxes paid by the former owners would have amounted to approximately $45,841 annually," the report said, "The authority's payments in lieu of taxes will amount to approximately $96,614.

An even larger difference will be shown when the Capitol Hill project is complete.

Whereas the Capitol Hill area has produced only $23,000 in taxes previously, it will produce an estimated $178,500 to the city each year after its conversion to new uses.

• **Sewage disposal program**—Nashville will have not one, but two sewage treatment plants under the city's revised plan for providing sewage disposal, W. A. Coolidge, city engineer, said recently.

And in changing from the original idea of one plant and an eight-mile hard-rock tunnel that would have carried the waste to it, he added, "We hope to save $4.5 million on the project."

The plant and its sewer appurtenances, Coolidge said, will still cost about $11 million—the amount the city council provided in revenue bonds last year to finance the facilities.

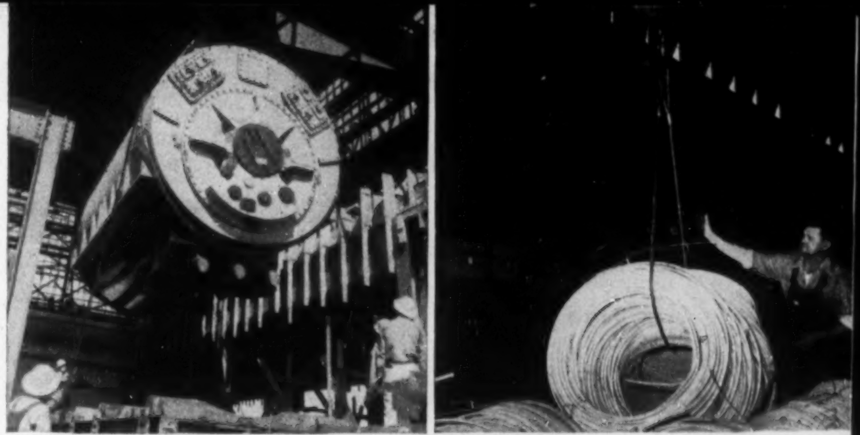
Had the design not been changed, however, its final cost would have come to about $15.5 million, according to best estimates—upped, Coolidge said, as a result of a rise in construction costs and because the tremendous increase in the population to be served necessitated an increase in the design size of the collector sewers that will intercept the city's 26 outfall sewers now emptying raw sewage into the Cumberland River.

The engineer said that the changes and shifts in population that had forced the revision in plans "actually worked to the advantage of the city because:

1. It required engineers to choose a site closer to the outfall sewers in North Nashville to avoid the costly necessity of tunneling almost across the city to reach the original plant site.
2. It caused engineers to design a second plant (to be situated on Richmond Creek in West Nashville) that ultimately may serve the fastest growing residential area of the city's outskirts.
3. It forced design of a third collector sewer across the city's northern border that possibly would open a virtual wasteland to industrial development.

The first plan considered a single treatment plant on the old prison farm in far West Nashville. This plan also

(*Continued on page 62*)

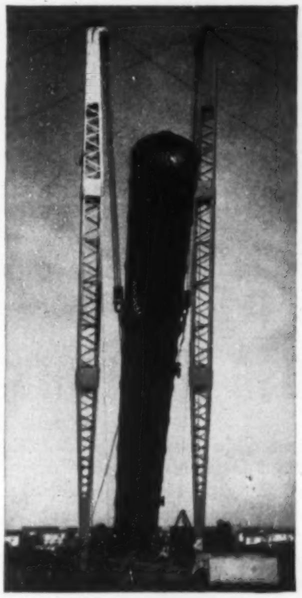


Multiple-part Red-Strand Slings handle heaviest loads, and are easy to apply to both the load and the crane hook. User tests in Detroit proved Red-Strand slings withstood unusual abuse, yet maintained higher-than-rated strength. A Gary plant uses Red-Strand single-part slings for many lifting jobs like this. These slings are available with various combinations of end fittings for attaching the sling to rings or lugs.

How to Select the Correct Sling for Your Job

Start your sling selection by analyzing five factors:
1. The load—its size, weight, shape, finish.
2. Working area, amount of head room.
3. Size and type of crane hook.
4. Angle of sling legs.
5. Location and type of lugs or rings, if any.

From this information your supplier can recommend the sling by type, size and length that is safest, longest lasting and most economical for your job.



A heavy cylindrical load usually calls for multiple-part Red-Strand Flat-Laced slings. They are strong, flexible and do not slip or abrade.

Types of Slings

Multiple-part slings are always recommended for heavy duty service, because for equal strength they are far more flexible than single-part slings. They hug the shape of the load easily, present a greater bearing surface to the load, and reduce the possibility of marring surfaces.

Where these factors are not so important, either Red-Strand *single-part slings* or *grommet slings* may be used for economy. Single-part Red-Strand slings are often recommended for lifting lighter weight objects, or those that have fixed attaching rings or lugs. Grommet, or continuous strand Red-Strand slings are ideal for forming hitches of various types without fittings.

When you re-use Pin-Lock thimbles you reduce sling costs by 21%

Extra Savings

Two suggestions will help you save money on slings.

The first is to re-use Pin-Lock thimbles on multiple part slings. These exclusive Leschen Pin-Lock thimbles cut sling costs on an average of 21% because they may be used again and again. They lock into sling loops with pins instead of permanent clamps, permitting re-use, and eliminating constant expense of thimble replacements.

The second suggestion is to use Red-Strand slings because they are made of *higher-than-rated* quality Leschen wire rope that delivers *longer-than-expected* service.

Get a copy of Leschen's *Sling Handbook* for complete information. Ask your Leschen man for one, or write.

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Tough Digging in Close Quarters

IN PORTLAND, MAINE, the soil in many places can be downright troublesome, with large stones and boulders mixed in with smaller stones and gravel, a combination that makes tough digging. Add to this the fact that trench lines in many places run right alongside rows of trees, poles and other obstructions and you've got a really mean job of trenching.

Yet this CLEVELAND Model 95 "Baby Digger" is moving right along on the job—as shown by the discharge from the conveyor—coming through with the same dependable performance that has made it an outstanding favorite for over 30 years.

This is the kind of job where CLEVELAND'S famous multi-speed transmission really pays off, enabling the operator to select the *right* combination of power and speed for the particular job condition from more than 30 available combinations of digging wheel and crawler speeds.

The "Baby Digger's" compactness and maneuverability also played important parts in completing this job right on schedule in spite of numerous obstructions. The large boulders deposited to the left of the trench in the photo show that good use was also made of CLEVELAND'S reversible conveyor on this job.

Write for descriptive bulletins and specifications, or get the full story on CLEVELANDS from your local distributor.

THE CLEVELAND TRENCHER CO.
"*Pioneer of the Modern Trencher*"
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envisaged collector sewers running along both sides of the river.

These collectors were to intercept waste flowing into the outfall sewers. The East Nashville collector connects under both plans with the collectors on the west side of the river by means of two river siphons.

• **Plans unchanged**—Thus far—except for the treatment plant—the plans are virtually unchanged, Coolidge said. "The main departure from the original plan comes in the design of the sewer that would carry waste to the main treatment plant."

Instead of the long tunnel to the old plant site near the state prison, a short tunnel will run to the new plant site just outside the north city limits. The smaller plant will serve the western fifth of the city.

To serve north and northeast Nashville, said Coolidge, another collector will have to be constructed running into the main treatment plant. 12,000 ft of this line will be force main, and 9,000 ft will be gravity.

Both treatment plants are designed to take care of demands up to the year 1975, but they also are designed for future expansion if necessary. The collectors are sized for the anticipated domestic and industrial sewage demands in the year 2,000.

Disposal of all sludge from both plants will be by incineration.

• **Highways**—Important links on three major arterial highways leading into Nashville will be widened to four traffic lanes under plans being studied by the Tennessee highway department.

W. M. Leech, state highway commissioner, said the proposed projects are under study as a part of the department's long range program.

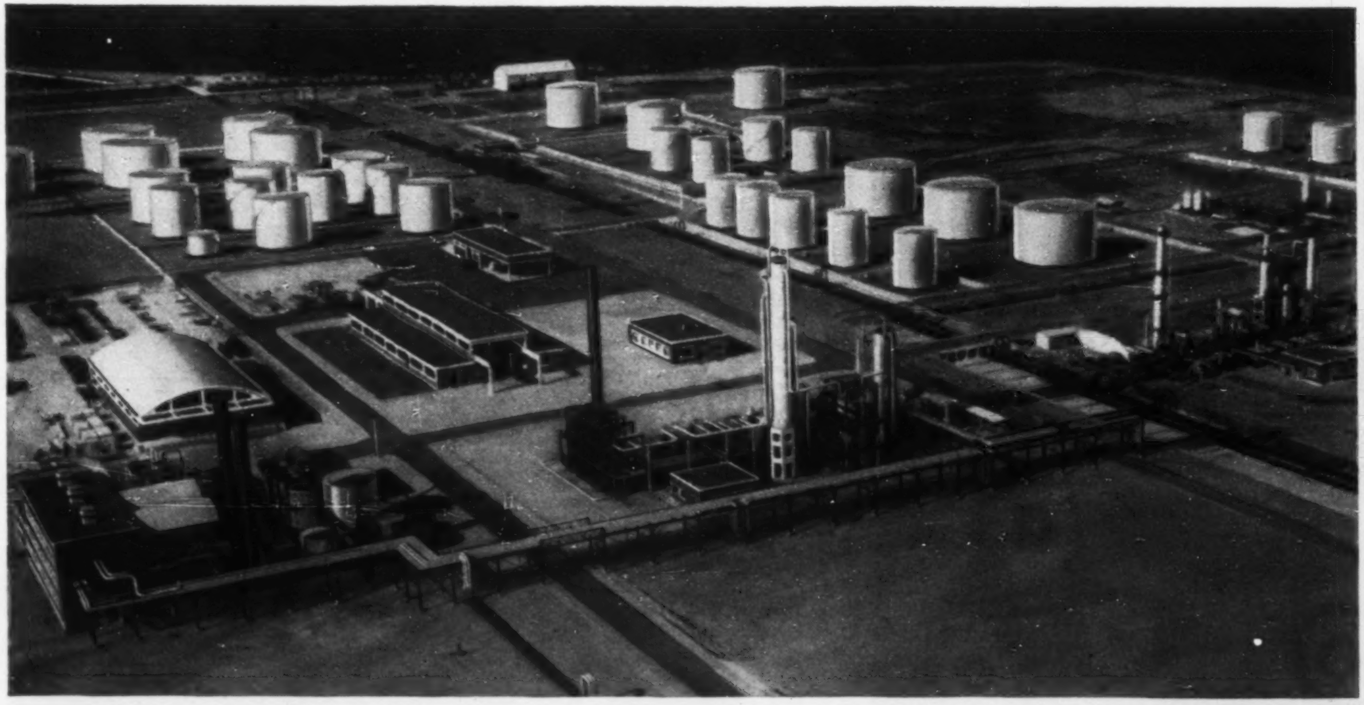
Those under the plan are Murfreesboro Road, seven miles; Gallatin Road, four-miles; Lebanon Road, a stretch between Nashville and Donelson.

• **Private dwellings**—Nashville builders are expected to erect at least 2,250 private dwellings in 1954, according to Albert G. Morris, president of the Nashville Homebuilders Assn.

"This compares with 1,976 homes built in the city and county in 1953," he said.

Morris said that there is a keen demand for housing in the area and that most houses to be built this year will be of the three-bedroom variety.

Construction costs of the estimated buildings this year will be about $34 million, he said, an average of about $9,500 a unit. Average last year was $8,534, and $8,489 in 1952, he said.



Crude oil is piped to the Sarpom Refinery at San Martino di Trecate, Italy, from Savona on the Mediterranean.

ITALY'S NEW LOOK

The basic design of the "Sarpom" refinery, recently completed on the plains of Northern Italy, is the work of Stone & Webster Engineering Corporation, with detailed engineering, procurement and construction management by its affiliate, E. B. Badger & Sons Limited.

The refinery, having a capacity of 15,000 barrels per day, consists of crude distillation, reforming, treating and general facilities. Catalytic cracking and polymerization units are now being added.

These facilities for Societa per Azioni Raffineria Padana Olii Minerali, a Caltex-Fiat subsidiary, are among eighty new refinery units recently executed by our Badger Process Division.

Write or call us for information as to how our experience may be of assistance to you.

STONE & WEBSTER ENGINEERING CORPORATION

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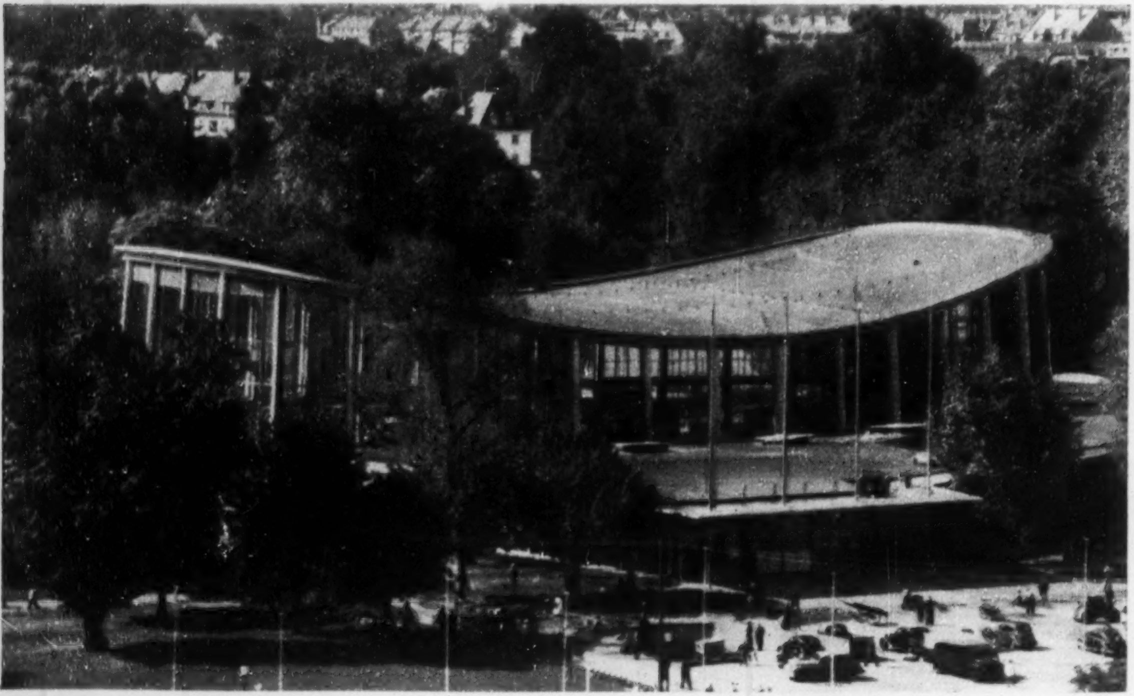


HYPERBOLIC PARABOLOID ROOF of exhibition hall, Karlsruhe, Germany, spans 233 ft longitudinally and 151 ft transversely.

"Saddle" roof, 2¼ in. thick, spans 233 ft

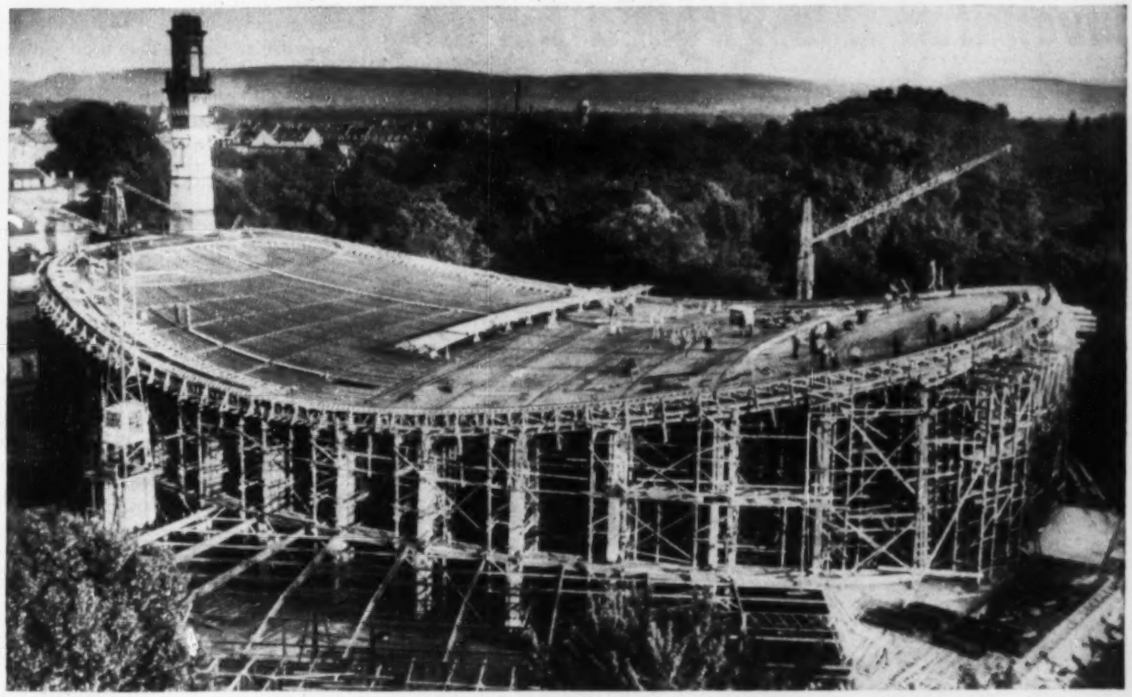
RING of reinforced concrete columns support compression chord circling roof.

To achieve long spans with a minimum of materials for the roof of an exhibition hall in Karlsruhe, Germany, the designer of the project picked a hyperbolic paraboloid form. Only 2¼ in. thick, the prestressed concrete shell has a span inside the huge hall of 233 ft in the longitudinal direction and 151 ft transversely across the hall.

Lending itself ideally to the design of long-span, thin-shell roofs, the theoretical hyperbolic paraboloid is a membrane with only direct stresses. Theoretically there are no secondary stresses due to bending in the infinitely extended form of this membrane.

• Catenary and arch—An oversimplification of the action of the roof is that it acts as a catenary in the longitudinal direction and as an arch in the transverse direction. In the roof design, two terminal beams support the narrow, longitudinal ends of the roof. The catenary tends to pull the two terminal beams in towards each other and a heavy chord circling the edge of the roof counteracts this tendency in compression.

In the transverse direction the thin-shell roof behaves something like an



FALSEWORK for lightweight roof shell was all of wood. Two cranes on either side of building raised roof construction materials.

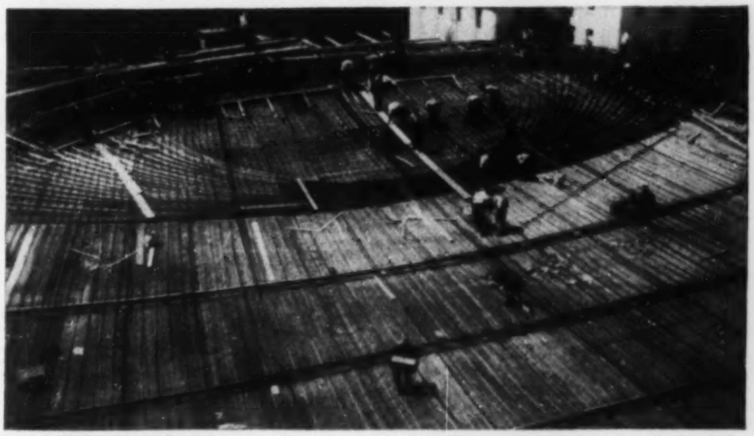
arch. The tendency of the cross-sectional "arch" is to set up tension forces in the edge beam, but these forces are compensated for by the much heavier compressive forces set up by the "catenary" action of the roof in the longitudinal direction.

• **Shear and buckling**—The edge beam is designed for shear and is heavy enough to withstand buckling induced by the action of the thin shell. Tension forces from the arch thrust and compressive forces from the catenary-like action of the roof tend to induce buckling action in the already bowed-out edge beam. And there is a good deal of shear which the beam has to take from the arch-like action of the roof in the transverse direction.

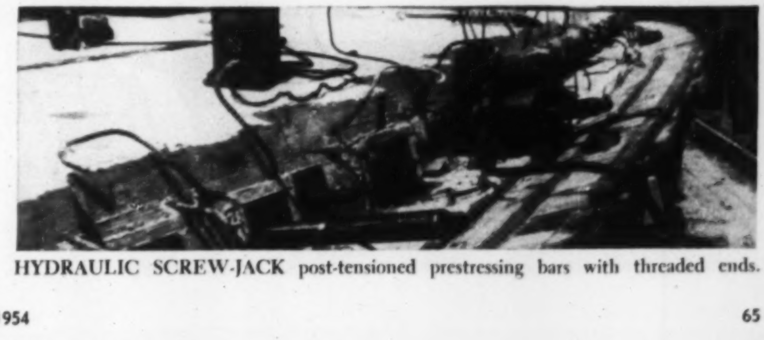
The termination of the hyperbolic paraboloid membrane at the edges of the roof sets up secondary stresses which would not exist in the theoretical case. The tensile stresses are counteracted by prestressing bars placed longitudinally and transversely.

At the narrow ends of the roof, near the terminal beams supporting the greater part of the roof's weight, the tensile stresses are enough to necessitate heavier prestressing than is used throughout the rest of the shell.

(Continued on page 66)

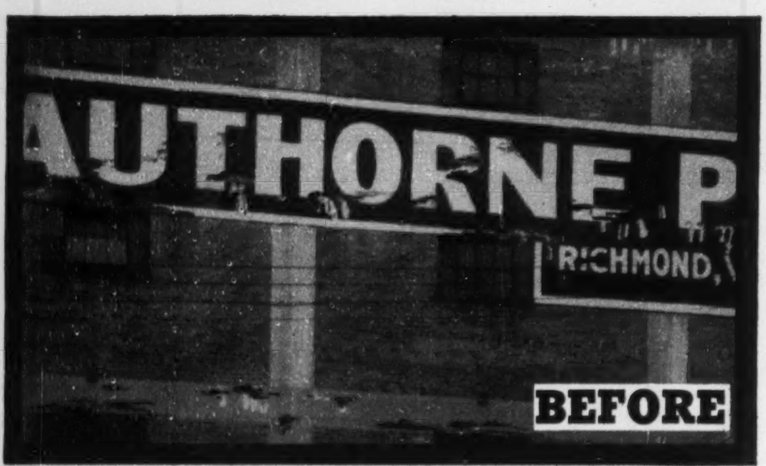


PRESTRESSING BARS are used to counteract tensile stresses in the thin shell of the hyperbolic paraboloid roof.

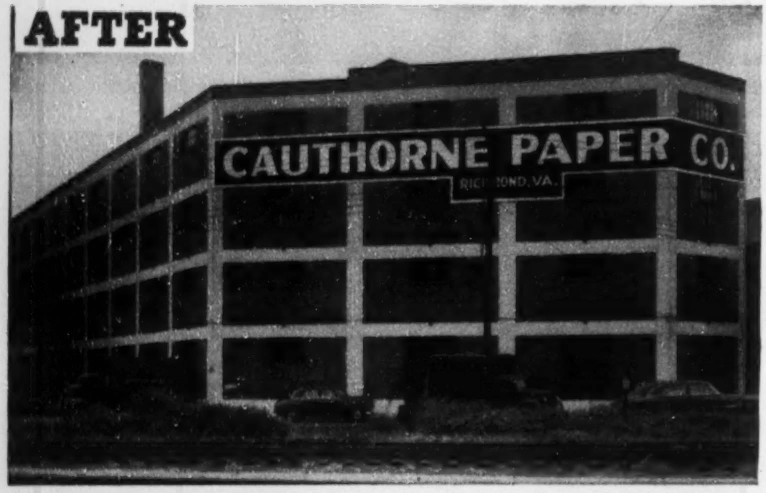


HYDRAULIC SCREW-JACK post-tensioned prestressing bars with threaded ends.

THORITE ***patching mortar and two*** **THOROSEAL** ***applications rejuvenated this Virginia building***



Constant weather exposure over the years caused the masonry of this building to disintegrate. If this unsightly condition had not been corrected it would have finally imperiled the structure of the building.



All concrete spandrel beams, columns, window heads and brick sills were patched and brought flush with surrounding surface by the use of The THORO System product, THORITE, a twenty-minute set, nonshrink, patching mortar. Two brush coats of THOROSEAL were then applied over entire reinforced concrete surfaces, to prevent further disintegration, also to beautify building.

CONTRACTOR: Southern Waterproofing and Concrete Company, Inc.,
1704 Arlington Road, Richmond, Virginia.

Get our pictorially-described literature, "HOW TO DO IT" and specification guide.

THORO
Since 1912

STANDARD DRY WALL PRODUCTS INC.
NEW EAGLE, PENNSYLVANIA

INTERNATIONAL

High-strength prestressing bars, 1 in. in diameter, are placed at the ends of the roof in semi-circular fashion in sheet metal tubes. These prestressing bars are so placed that their ends will be normal to the edge beam at the narrow end of the roof. By placing the ends of the bars normal to the edge beam, proper stress is provided at the edge of the thin shell where it is needed most because of the termination of the hyperbolic paraboloid shell.

Longitudinal prestressing bars in the roof lie at 16-in. centers. Transverse and longitudinal stiffening ribs, 5½ in. and 4 in. thick respectively are placed at 16 ft. 5-in. centers. And the transverse ribs contain the only prestressing bars that are placed in the transverse direction.

Height of the roof in the center of the hall is just over 43 ft. Height of the roof at the ends is 57 ft 8 in. and at the sides 39 ft 4 in.

Of the 36 wall panels formed between the roof-supporting reinforced concrete columns around the edge of the structure, 31 are fully glazed panels. The other five wall sections at one end are reinforced concrete walls.

Air conditioning is provided in the summer months by circulating fresh air that has been cooled by ground water.

During festivals, 4,500 people can be seated in the hall, and the stage can accommodate 1,500 singers.

The roof at the exhibition hall was designed by Ulrich Finsterwalder, director of Dykerhoff & Widmann, Munich, Germany, the builders.

U. S. donates $11 million toward Indian dam project

The U. S. will contribute $11 million toward construction of a new river development project in Northern India—the $70-million Rihand Dam at Pipri, 100 mi south of Benares.

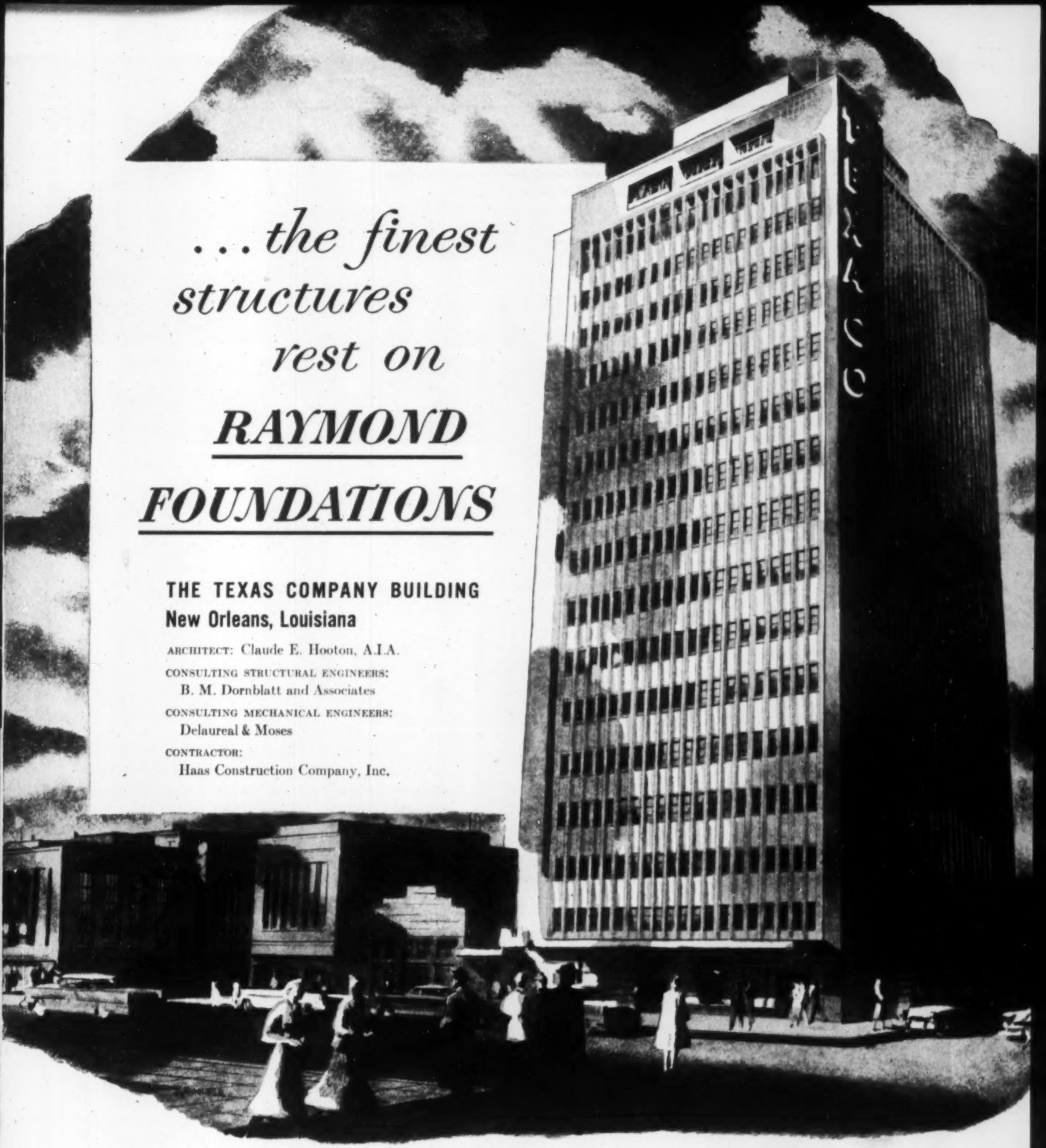
Most of the money ($8.5 million) will be used to buy equipment and machinery, while the rest will go toward the financing of engineering services.

U. S. aid to India for irrigation and power works now totals more than $21 million.

The proposed dam—300 ft high and 3,000 ft long—would have an ultimate installed capacity of 240,000 kw. A large block of this power will be used to pump water from wells irrigating from 1 to 1½ million acres of land. Water from an 180-sq mi reservoir would bring an additional 400,000-500,000 acres under irrigation.

Preliminary work on the 12-year

(*Continued on page 70*)



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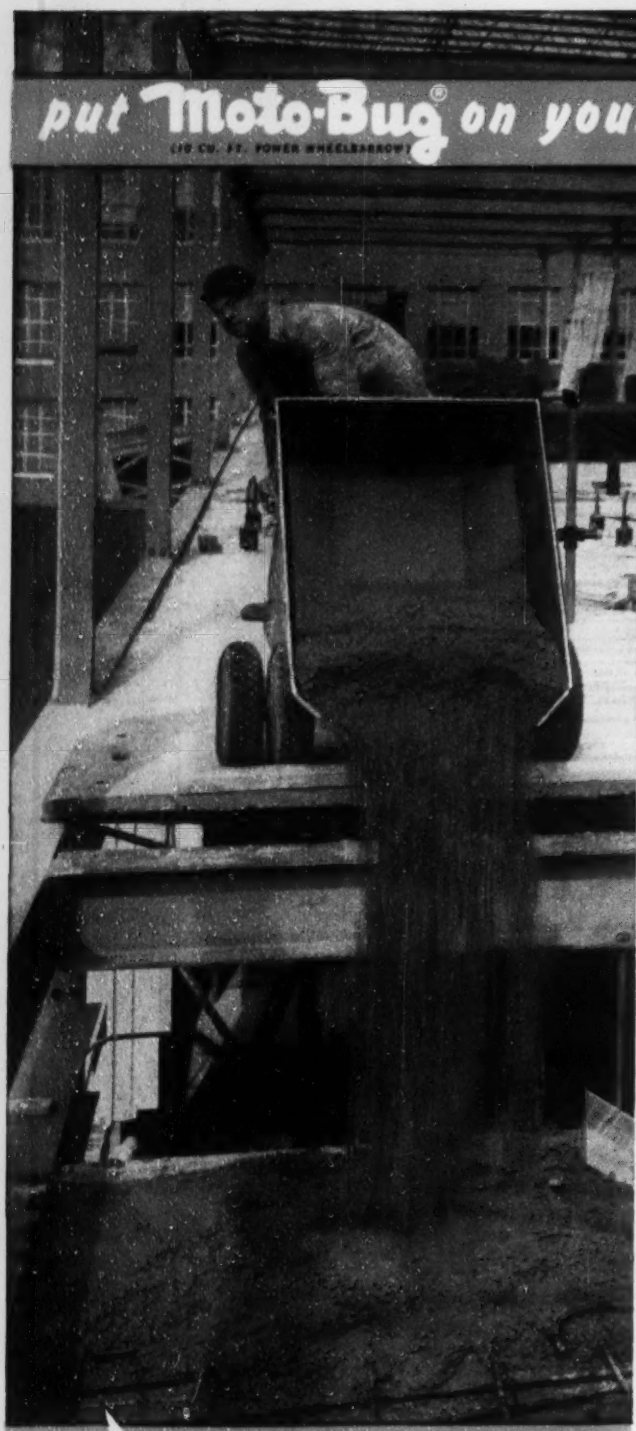

put Moto-Bug® on your payroll . . .

(10 CU. FT. POWER WHEELBARROW)

...One

DOES THE WORK OF

3 TO 4

Hauling 1500 pounds or 10 cu. ft. (struck) of bulk materials each trip, Kwik-Mix Moto-Bug easily does the work of 3 to 4 hard-to-get manual laborers. It travels *twice as fast* and hauls *three times as much* as a man with an ordinary wheelbarrow. On many jobs, owners report Moto-Bug pays for itself in less than 30 days, from savings in labor alone. It hauls concrete, plaster, brick, tile — anything you can shovel, pile or stack into the hopper body.

Compact, light, Moto-Bug rides to upper stories in regular construction elevators. Or it climbs 20% ramps to the top, fully loaded. 75% of loaded weight on front drive-tires gives plenty of grade-climbing traction. Short 61-inch turning radius, 33-inch width, and hinged riding step, make it easy to clear crowded work areas. Hopper body has instant gravity dump with snub-line control.

No push, *no pull* — Full power forward and reverse gives fast backing and spotting. Reverse is instantaneous. There's 3.6-to-1 gear ratio on big steering wheel for effortless maneuvering. Dual steering wheels, and optional duals on the drive end, provide plenty of rubber-tired traction, flotation and handling ease on or off pavement.

3-tool usefulness — Interchangeable ¾-ton capacity platform and ½-ton (5-foot) fork lift extend Moto-Bug's labor-saving economies to all kinds of material handling. Check for yourself. See Kwik-Mix distributor or write us for demonstration.

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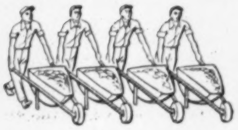
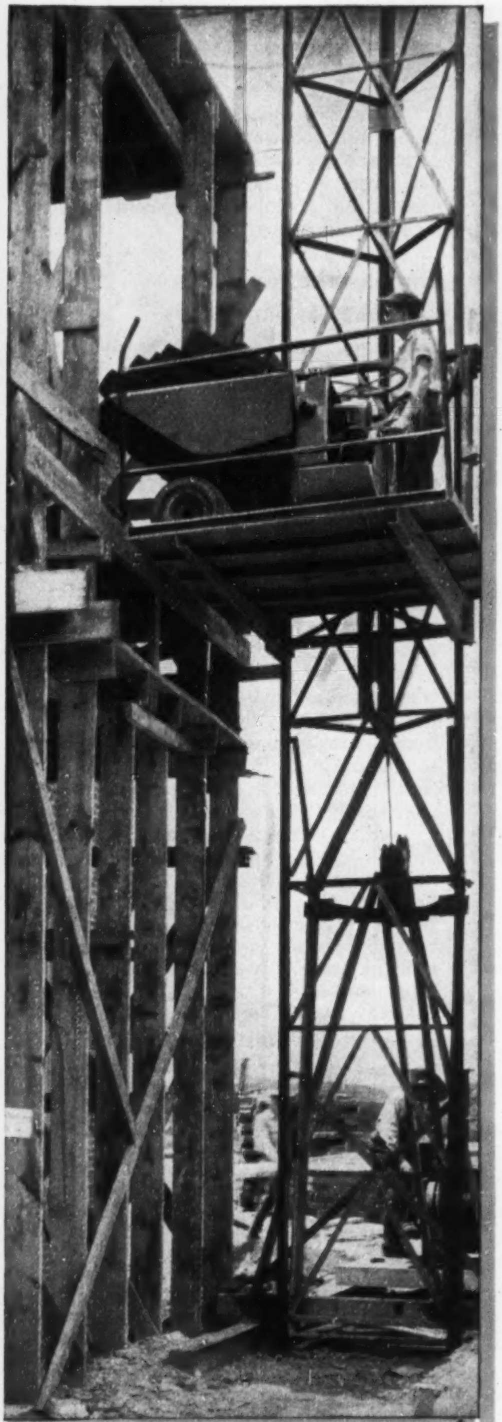




↑ **2 MOTO-BUGS, riding hoist elevator, distributed all blocks, bricks, mortar and concrete on Rocky Point, Va. school building (above). "Haven't spent a cent on them in 6 months", says the job foreman. "They're tough buggies — and they have saved us a lot of money and time."**

Johnson 3/8 to 3-yard Clamshell Buckets

Smooth inside and out, Johnson all-welded clamshells dig and dump with less resistance . . . give fast clean discharge. They're quick-filling, easy-closing, because big needle bearing-mounted sheaves reduce friction loss, deliver full digging power to cutting edge. Hard manganese edge, welded to heavy lips, toughens with use. 3 types, 10 sizes: ⅜ to 3 yds. Also check Johnson line of concrete plants, bins, batchers, hoppers, silos.

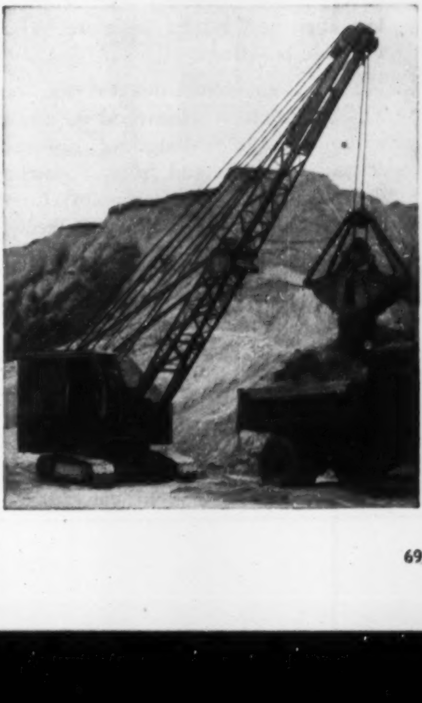
C. S. JOHNSON • Champaign, Ill.
(Koehring Subsidiary)

215 Trenchliner® digs 18 feet per min.

With 30 digging feeds, this cross-country 215 Trenchliner digs 6 in. to 18 feet per min., 13 to 31 in. wide, up to 6 ft. deep. Square or round-bottom buckets have "easy-in, easy-out" Tap-In teeth. Standard tractor-type crawlers have 18-in. treads, lug-type shoes. Other Parsons Trenchliners: wheel-type 202 for drainage and utility work; 3 ladder-types, full crawler mounted; and the mobile, utility size rubber-tired Trenchmobile®.

PARSONS • Newton, Iowa
(Koehring Subsidiary)

Koehring ½-Yd. 205 has 10 or 15-ton lift



On clamshell, dragline, or lift crane operation, you gain an important advantage in extra load capacity with Koehring heavy-duty 205. On crawler mounting, it has 10-ton lift capacity, and boom lengths of 30 to 50 feet. As a rubber-tired truck crane, it safely lifts up to 15 tons. Maximum boom length is 55 ft. Quickly converts to ½-yard shovel or hoe. Three other Koehring sizes up to 2½ yards . . . crane lift capacities up to 79½ tons.

KOEHRING Company
Milwaukee 16, Wisconsin

264

Timber Structures, Inc., fabricated and assembled 773 Arch-Teco bowstring timber trusses, 71' span, with Teco Wedge-Fit connectors for Parr Warehouse Co. project at Franconia, Va. Ward & Bowles, architects; Barrett & Hilp, contractors.

Put more post-free, useful space into large or small commercial buildings—for less money—

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TIMBER TRUSSES

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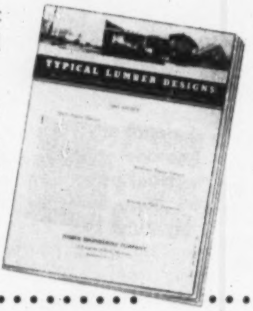
Clear, unobstructed space, provided by TECO timber trusses, permits faster construction at less cost, and results in more versatile and valuable buildings.

Typical roof truss designs, illustrating the TECO system of construction, are available without charge to designing engineers. These designs for light and heavy construction are listed in the booklet, "Typical Lumber Designs". Send for FREE COPY today.



TIMBER ENGINEERING COMPANY 1319 18th St., N.W., Washington 6, D. C.
CHICAGO • NEW ORLEANS • IN CANADA: J. E. GOODMAN SALES, LTD., TORONTO

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City.......... Zone.......... State..........

ENR-547

project was started in 1948. Drilling of foundation rocks and detailed studies already have been undertaken. At present two related works—a cement plant and an access road—are under construction at Robertsganj, about 50 mi from the dam site.

Europe takes up subject of rubber-asphalt roads

An increased use of rubber-asphalt mixtures for road surfaces will be pushed in Europe—if reports from various countries now testing the material prove favorable.

The use of pulverized raw rubber or liquid latex milk with basic asphalt material was the central problem taken up at the recent International Rubber Meeting in Vienna. The meeting—jointly sponsored by the International Rubber Bureau of Delft, Holland, and the Austrian Association of Chemists—was attended by delegates from West Germany, Indonesia, The Netherlands and Austria.

Two reports on the surfacing came from laboratory studies that have been conducted in Delft, and experiences with European test rubber roads in use since 1946.

Austria has completed a pair of road projects featuring rubber additives in the surfacing material. One—the surface over the "Floridsdorf" Danube Bridge in Vienna—has proven satisfactory, especially in the section where the street car rails were laid on top of rubber cushions. Results are not available yet on the second test stretch, which was finished last fall.

Correction

Because of the metric system's use of commas where we use decimal points, a mistake was made in converting the metric quantities of concrete given in a French report on the reinforced concrete tanks discussed in the article "Unfinished reservoir filled with water to stress hollow arch-wall construction," in ENR April 29, 1954, p. 61. Quantities of concrete used in a typical and a "hollow arch" reinforced concrete reservoir, as set down in the comparison table (p. 62), should read in hundreds rather than hundreds of thousands, as follows:

	Typical reinforced concrete	Hollow arch wall
Cu yd in floor....	214	137
Cu yd in wall.....	398	204
Total cu yd......	612	341
Tons of reinforced steel	65	24.2

40 CRANE CAPACITIES OFFERED BY LORAIN...

but there are more to cranes than just capacities. Lorain Cranes are much more than shovel turntables with crane booms attached. Instead, the Lorain Crane line embodies features designed especially for profitable, heavy-duty lifting crane service . . . features such as power load lowering, precision boom hoist, third drum attachment, throttle control of load, hydraulic coupling (no slam-bang or jerk), all-purpose boom heads, pin-connected booms, air controls. These and many others give you a real, honest-to-goodness lifting crane when you buy Lorain. See your nearby Thew-Lorain Distributor for details.

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WITH LONG BOOMS

WITH SHORT BOOMS

WITH TIP EXTENSIONS

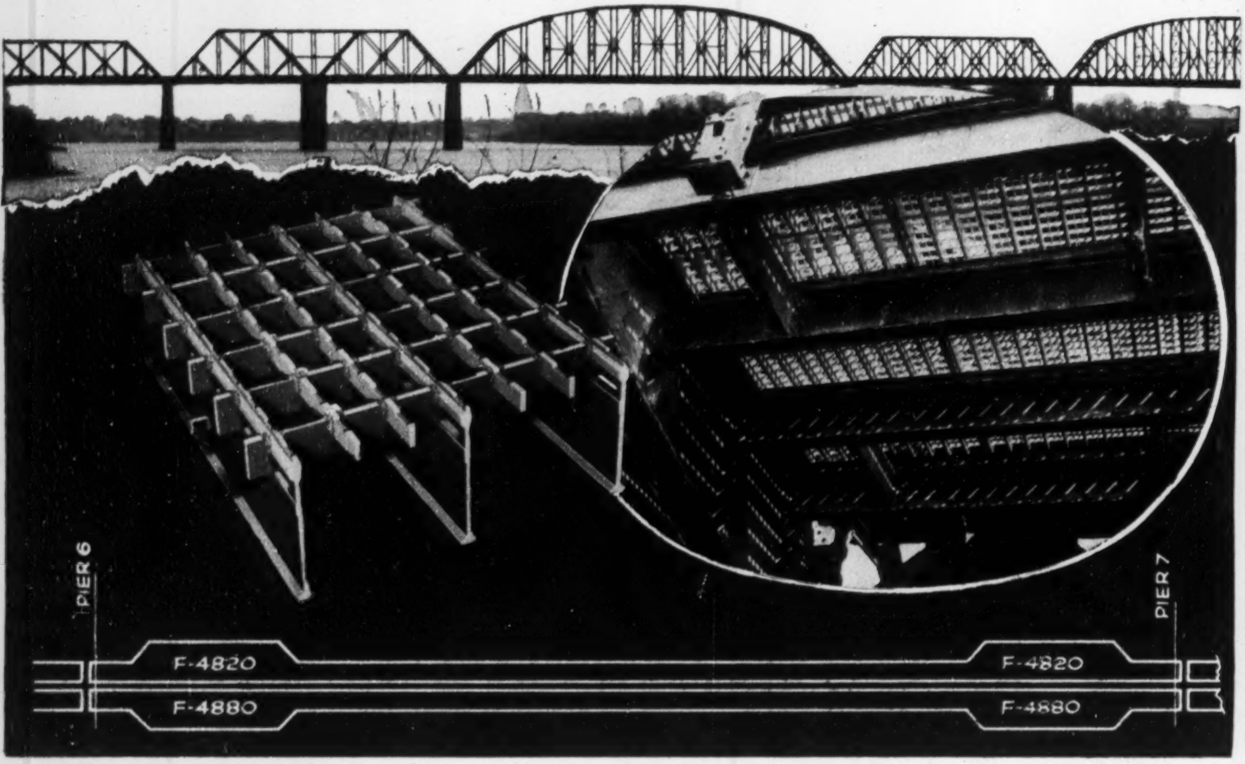
ON WIDE CRAWLERS

ON LONG CRAWLERS

AS MOTO-CRANES

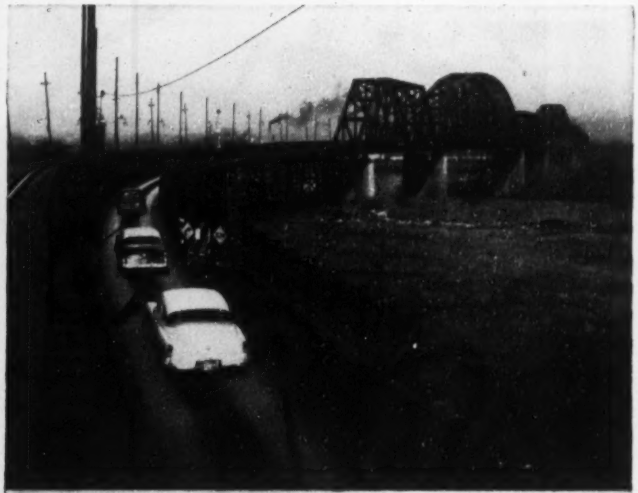
AS SELF-PROPELLED CRANES

Another costly maintenance problem



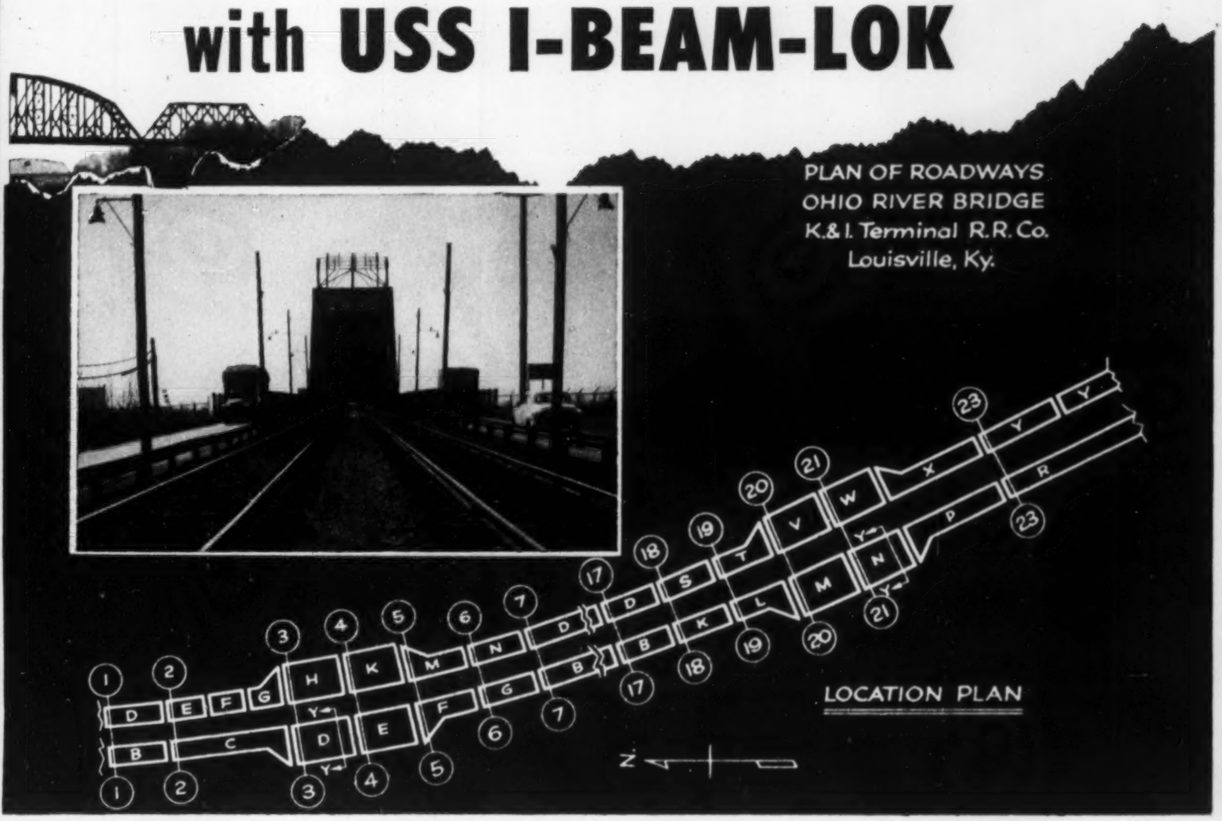
K & I Terminal R R Company replaces troublesome roadways

A SECTION of the west roadway of the south approach showing the smooth-riding, skid-resisting, self-cleaning surface of USS I-Beam-Lok Open Steel Flooring as it widens out to provide a passing area.



THIS IS A VIEW of the east roadway of the south approach showing curve and elevations. Note narrowness of roadway and the heavy concentration of wheel loads that made old block roadways so expensive to maintain.

solved by reflooring old bridge with USS I-BEAM-LOK



on Ohio River bridge with modern open steel flooring

● Another important old bridge has taken a new lease on life. And what a welcome relief to its owners, the Kentucky and Indiana Terminal Railroad Company, who had the costly problem of maintaining the obsolete laminated wood deck and asphalt surfaced roadways!

Neither the original 3½" x 9" wood block flooring on the present bridge which was completed in 1913, nor the still heavier floor which replaced it were adequate for the traffic of the times. So, in 1949, finally fed up with the endless problem of trying to maintain the troublesome old flooring, the owners experimented with an open type steel deck on 120 feet of roadway.

The results were so satisfactory, that in 1951 USS I-Beam-Lok was used on the east roadway of the south approach. In 1952, USS I-Beam-Lok was laid on the east roadway of the bridge proper. And in 1953, the entire west roadway was refloored with USS I-Beam-Lok.

In all, 1,708,000 pounds of 5" USS I-Beam-Lok Open Steel Flooring was used to cover the two 11' x 4098' roadways of the approaches and bridge. All work was done at night, and without interruption of traffic!

By using 5" open steel flooring, which weighs 18.8 pounds psf as against 60 pounds psf for the old flooring, it was possible to save approximately 3,739,820 pounds in the weight of the floor.

USS I-Beam-Lok Open Steel Flooring is available in units measuring 6'2" in width and up to 49' in length. In many cases it can be applied directly to stringers on spans up to 4' centers to permit H-20 loadings without secondary supports. It can be erected easily and speedily on reflooring projects such as this with a minimum interruption of traffic.

For more information about this modern lightweight open steel flooring (USS I-Beam-Lok is also available in concrete-filled type), contact the sales office nearest you.

UNITED STATES STEEL CORPORATION, PITTSBURGH · COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO
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Makes clamshell operations easier and faster!

Crane operations are more profitable when you install Rud-o-Matic Taglines. Heavy duty torsion coil spring keeps tension on tagline cable at all times for bucket control. Buckets are held steady at any angle of the boom. Available in 11 models for various bucket sizes and pull out requirements. Taglines delivered fully equipped with fairlead and cable attached—ready to install. Get more pay loads per day with *your* crane with Rud-o-Matic Tagline Control!

For full information on Rud-o-Matic Taglines, call or write—

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MEN AND JOBS

Cover and above photos by Robinson

DALE L. MAFFITT: He hasn't spent a dull day yet.

How to attract engineers to careers in waterworks: An expert's views

Justifiable concern has been expressed recently concerning the problem of fostering waterworks careers.

The simplest solution to state—and perhaps the toughest to effect—is payment of higher salaries that will attract promising young men. But there is more to it than that.

For the insight of an insider now at the top of the waterworks profession, ENR interviewed Dale L. Maffitt, who takes over as president of the American Water Works Association at its convention in Seattle, Wash., next week. Maffitt is general manager of the Des Moines, Ia., Waterworks.

Mr. Maffitt, when did you enter the waterworks field, and after what schooling and training?

"It was on Dec. 30, 1914, after having been graduated from Drake University with a Bachelor of Science degree. I had majored in chemistry and had done considerable analysis of water during my summer vacations. Later, I took a leave of absence and spent a year at Massachusetts Institute of Technology, taking graduate work. There I did special study on water, milk and food analysis."

You are a Phi Beta Kappa. Was your first job as assistant chemist for the Des Moines Water Works an attractive position both in its responsibilities and its remuneration for an obviously superior college graduate in '14?

"Yes, it was. Actually, I became a member of Phi Beta Kappa after I had finished my college work and was working for the Des Moines Water Works."

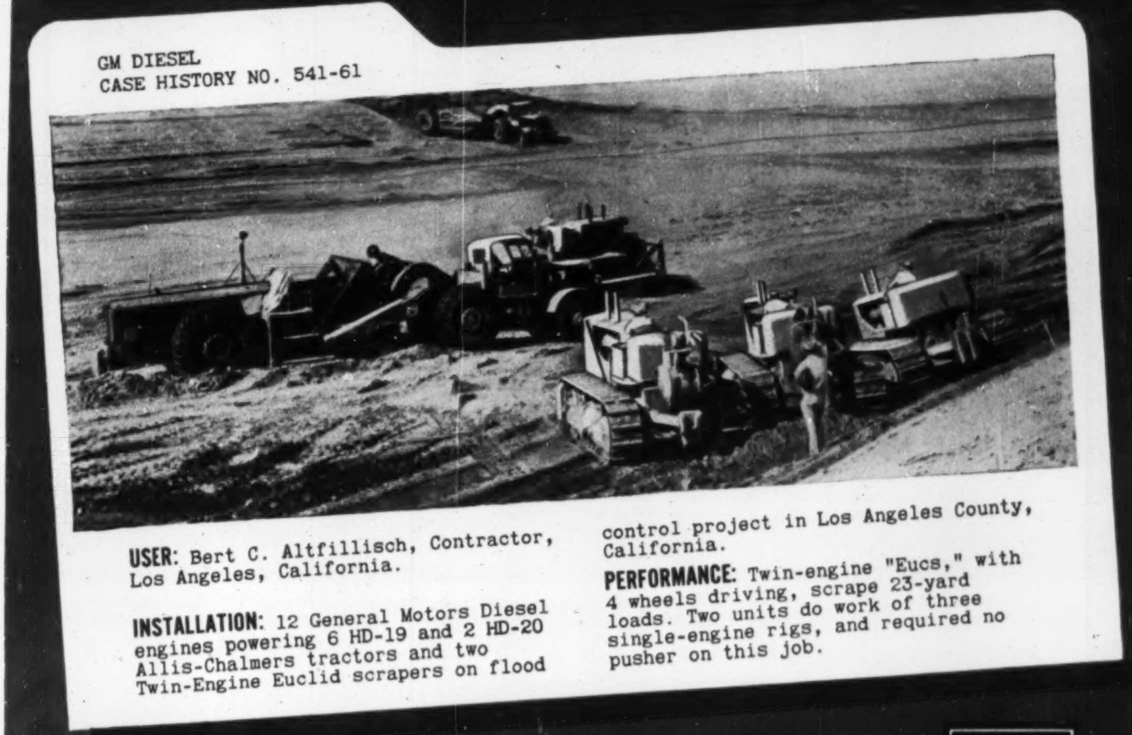
What fields other than the waterworks profession were open to you at the time of your graduation, and which were the most attractive?

"Upon graduation from college I was anxious to get into the waterworks field. However, I did temporary work between June and December of 1914 in newspaper and Chautauqua work. During my school days I worked in drug stores during vacation periods."

When and why did you determine to make waterworks your career?

"I chose the waterworks position because I was especially anxious to get into that type of work—at that time, of course, only thinking of the chemical end of the business. After

(Continued on page 79)



GM DIESEL
CASE HISTORY NO. 541-61

USER: Bert C. Altfillisch, Contractor, Los Angeles, California.

INSTALLATION: 12 General Motors Diesel engines powering 6 HD-19 and 2 HD-20 Allis-Chalmers tractors and two Twin-Engine Euclid scrapers on flood control project in Los Angeles County, California.

PERFORMANCE: Twin-engine "Eucs," with 4 wheels driving, scrape 23-yard loads. Two units do work of three single-engine rigs, and required no pusher on this job.

It Pays to STANDARDIZE on
available in more than 750 models of equipment built by over 150 manufacturers.

GM
DIESEL
POWER

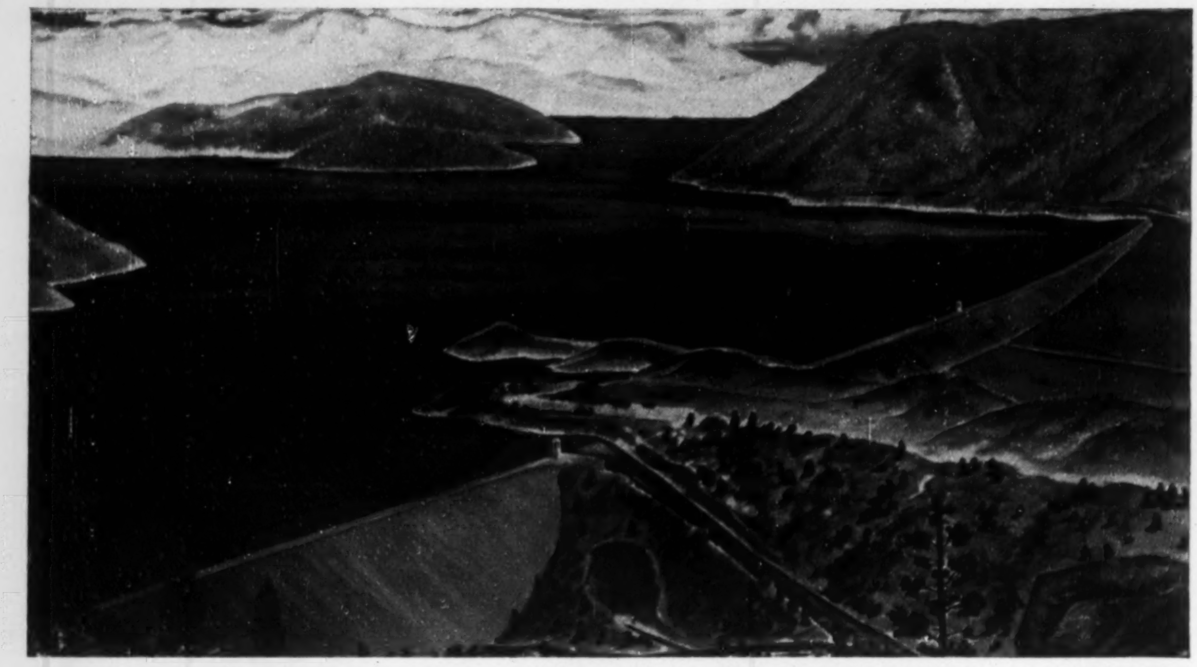
2 units do the work of 3

With two General Motors Diesel engines—one pulling and the other pushing—two 24-yard (heaped rating) twin-engine Euclid scrapers hauled as much yardage as three single-engine units did on this 1½-million-yard flood control project. What's more, the GM Diesel-powered "Eucs" scraped 40 tons in a single pass *without a pusher*.

Delivering power at every piston downstroke, quick-acting GM 2-cycle Diesels respond faster when the blade hits the dirt—accelerate quicker for faster runs to the spreading site. They start at the push of a button even in coldest weather—deliver thousands of hours of trouble-free operation. Clean, simple design makes maintenance easy and many moving parts can be interchanged between all Series 71 Models. When parts *are* needed, they're quickly available at low cost from your GM Diesel Distributor. For full details on GM Diesel power for your job, call him in today.

★ ★ ★

DETROIT DIESEL ENGINE DIVISION
GENERAL MOTORS • DETROIT 28, MICHIGAN
Single Engines . . . 16 to 275 H.P. Multiple Units . . . Up to 840 H.P.



Isabella Dam shows the main dam, lower left, and auxiliary dam at right. Granite hill between the two units has outlet tunnel passing through it and spillway over it. Canal feeding from auxiliary dam supplies a power company with water to turn turbines.

2,900,000 cu. yds. of fill moved quickly on Isabella Dam

CAT* equipment and one of the largest rippers ever built team to build a dam to control the Kern River

Isabella Dam, 1,725 feet in length and 185 feet high, is ready to tame the unpredictable Kern River in California. Its completion relieves Bakersfield of the menace of floods and brings promise of greater irrigation to the lower San Joaquin Valley.

The idea was to regulate the Kern, a river of extremes. Its annual flow varies from 1,900,000 acre-feet to as little as 185,000. To do the job Isabella Dam is divided into two sections: the main dam consisting of 2,900,000 cu. yds. of fill; the auxiliary dam, 100 feet high, 3,325 feet long with 1,800,000 cu. yds. of fill. Separating the two is a hill of granite, through which has been holed the 800-foot main outlet tunnel, and over which passes the spillway.

Macco Corporation, Morrison-Knudsen Company Inc., and River Construction Corporation were awarded a $5,873,782 contract for constructing the main dam, completing the auxiliary dam, realigning a section of the canal and building a spillway. They enlisted the aid of a fleet of dependable, swift Caterpillar* machines to do the job which was designed and supervised by the Sacramento District, Corps of Engineers, U. S. Army.

The 2,900,000 yards of fill for the main dam was decomposed granite. Using Cat DW20 Tractors and matching Scrapers, the contractors hauled a daily average of 25,000 cu. yds. over a distance of 4,000 feet in two 9-hour shifts.

The material was broken up by rippers, including one of the largest rippers ever built. Aluminum irrigation pipe was laid across the broken area. The material was sprinkled for several hours, sometimes as much as 48 hours, after which it was picked up by earth-eating DW20 Tractors and Scrapers. Compaction was obtained by a 50-ton Southwest rubber-tired tamper pulled by a

CAT DW20 AND SCRAPER hauls part of the 2,900,000 cu. yds. of fill needed for the main dam. Contractors used a fleet of DW20s on the job, along with D8s, No. 12 Motor Graders and D13000 Engines. With a haul distance of 4,000 feet, the DW20s carried a daily average of 25,000 cu. yds. in two 9-hour shifts per day. Most of the fill was decomposed granite.

DW20. Working in conjunction with the tamper was another DW20 pulling an 18-foot offset disk.

Rugged Caterpillar equipment entered into every phase of the job. In all, the contractors made use of fourteen DW20s with Scrapers, three DW20s with plows and compactors, eight D8s, two No. 12 Motor Graders and D13000 Diesel Engines to power Gardner-Denver compressors.

From experience these contractors know the dollar-saving advantages of standardizing on Caterpillar equipment. Through this wise standardization, their operators and mechanics become familiar with one make of equipment. There is no need to carry a stock of parts. Many parts on Cat Engines are interchangeable—and service from your well-stocked Caterpillar Dealer is prompt.

Why not have your Caterpillar Dealer demonstrate the equipment that will do your job quicker and cheaper? Discover for yourself the reasons why the machines you see on the toughest jobs are always Caterpillar yellow.

THREE CATERPILLAR UNITS work together on the auxiliary dam. Widening and raising the fill are a DW20 pulling a 50-ton tamper, a DW20 pulling an offset disk and a third DW20 spreading fill for the job.

CATERPILLAR TRACTOR CO., PEORIA, ILLINOIS

*Both Cat and Caterpillar are registered trademarks – ®

A CAT NO. 12 MOTOR GRADER finishes the bottom of a canal while D13000 Diesels power Gardner-Denver 500 compressors on top of bank. Graders also maintained haul roads.

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KENTUCKY—Louisville Paducah
LOUISIANA—New Orleans Shreveport
MAINE—Portland
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MICHIGAN—Lansing • Muskegon Saginaw • Flint • Detroit • Jackson
MINNESOTA—St. Paul • Duluth Minneapolis
MISSISSIPPI—Jackson
MISSOURI—St. Louis Kansas City
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NEVADA—Reno
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NEW YORK—Buffalo Manhattan • Queens • Brooklyn
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NORTH DAKOTA—Minot
OHIO—Dayton • Sandusky Toledo • Cincinnati • Columbus Cleveland
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taking a position with the Des Moines Water Works, which was at that time a private company, I felt determined to continue and to make this industry my career."

How steadily, rapidly or otherwise did you progress within the Des Moines waterworks organization?

"I was assistant chemist until the first World War, at which time I was offered the position of chief chemist, which I accepted and held until July, 1926. At that time I became assistant to the late Charles S. Denman, the general manager, and worked closely with him until his death in 1933, at which time I was made general manager, under a Board of Water Works Trustees, which was made responsible for the operation of the Des Moines Water Works after it was purchased from the private company by the city of Des Moines in 1919."

Your are a 40-year man, and general manager for more than 20 years. Have you any regrets at having chosen waterworks administration as a career?

"I have thoroughly enjoyed all of my time with the Des Moines Water Works, and especially since I have had the privilege of being the general manager."

What have been the greatest compensations?

"One of the greatest has been watching the plant grow and being able to have a part in its development. It is also gratifying to realize that our efforts along the line of public relations have resulted in our enjoying fine cooperation from the community."

What are the headaches?

"We have very few."

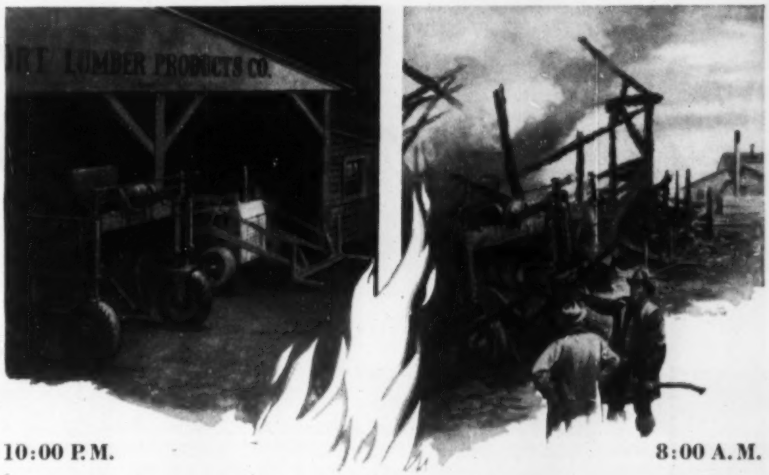
What are the major projects of construction, finance and organizaton that you have handled since taking over management in 1933?

"The building of our system in such a manner that we have never had a shortage of water in this community—and we are in fine financial order. We do all of our capital improvements out of income. We have built a $2-million softening plant, which has been well received in the community; we have a fine organization of competent, interested individuals."

Is there community recognition and prestige for the capable waterworks administrator?

"Yes, there is.

(*Continued on page 82*)


10:00 P.M.
8:00 A.M.

Scrap value: $65

...but our Hartford Contractors' Equipment policy paid us $12,250!

(Based on Company File #63028)

Our men had been working at the saw mill. When quitting time came, they put our tractor and the straddle carrier in the mill's planing shed.

During the night, the shed caught fire. Our two pieces of equipment—worth over $12,000 – were a total loss. What was left brought $65 as scrap.

I'm mighty glad we were prepared for something like that. Under our Contractors' Equipment policy, the Hartford Fire Insurance Company paid us $12,256.70.

Are you "prepared for something like that," too?

It doesn't have to be *fire*. Wherever your equipment is, lots of hazards lie in wait for it. Theft, for example. Or damage by explosion, collision, overturn, landslide, windstorm or riot.

That's why we suggest the *broad protection* of a Hartford Contractors' Equipment policy.

Have your Hartford Fire Insurance Company Agent or your insurance broker give you the complete facts about this insurance, outline a sound program of protection for *your* equipment—now.

Year in and year out you'll do well with the

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Hartford Live Stock Insurance Company • *Hartford 15, Connecticut*

How much is your equipment worth?

The Hartford Fire Insurance Company has prepared a free booklet, *Your Machinery and its Actual Cash Value*. Send for a copy. It may help you avoid a big loss.

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HARTFORD Fire Insurance Company
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Please send me a free copy of *Your Machinery and its Actual Cash Value.*

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At this world-famous shipyard . . .

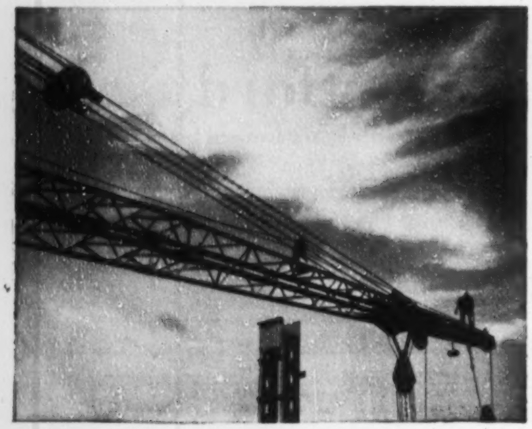
"We specify we need the

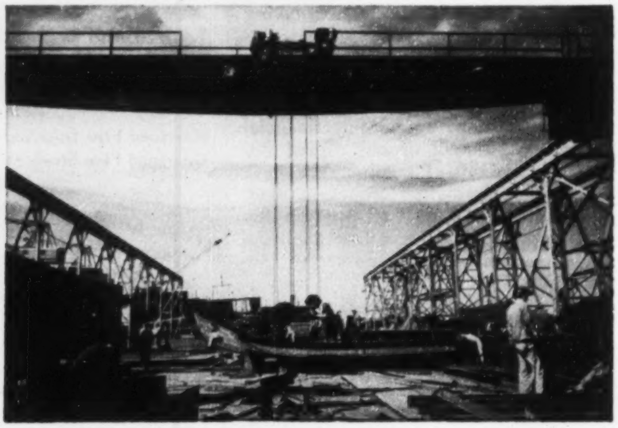
AMERICAN STEEL AND W
WIRE ROPE
AMERICAN STEEL AND WIRE DIVISION
WIRE ROPE

• Maintenance and inspection of rope, grooves, and sheaves is a daily routine at Ingalls. This company keeps all of its equipment in top notch condition, remachines worn grooves before they can damage a rope, lubricates all rope regularly. This extra care assures top performance and service life from Tiger Brand Rope.

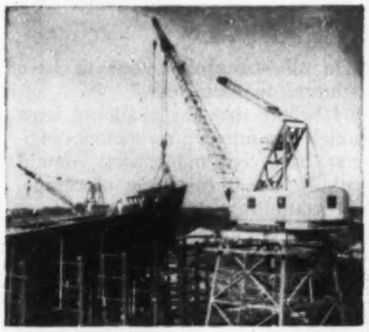
• Over 65,000 ft. of rope are used on the hoisting equipment at this big shipyard. Ingalls Shipbuilding Corporation likes Tiger Brand Wire Rope because it gives excellent service and assures maximum safety.

• Tiger Brand Hoisting Rope has the extra reserve strength, flexibility, and fatigue resistance needed on the 12 bridge cranes at Pascagoula.



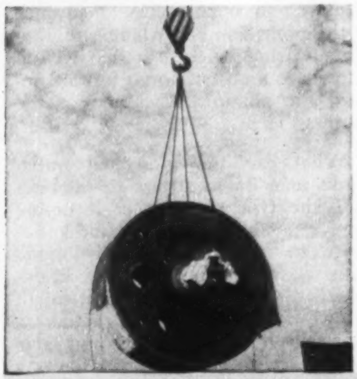


Tiger Brand because best wire rope we can get!"



• If a rope broke on this crane, the boom would snap back and topple the whole machine over. And it's 80 feet to the ground. Ingalls prevents accidents like this by specifying dependable Tiger Brand Wire Ropes for hoisting machines and for safety lines around the scaffolding used to build a ship's hull.

• The lives of 150 workmen, as well as millions of dollars worth of equipment, depend on the strength and durability of wire ropes at this shipyard. In addition to hoisting, Ingalls Shipbuilding Corporation uses Tiger Brand Wire Rope to secure ships to the outfitting docks, to tie off sections of a ship until it can be fitted and welded, and for guys, rigging, and cargo falls aboard ship.



WITH production going full tilt at this mammoth Pascagoula, Mississippi shipyard of Ingalls Shipbuilding Corporation, 19 gantry cranes, 12 bridge cranes, 6 locomotive cranes, and many mobile cranes and electric and air hoists are lifting, moving, and sorting materials day and night. Tiger Brand Wire Rope is working away on these machines 16 to 24 hours a day, 5 days a week, *every* week of the year, assuring peak performance and safety.

Safety is all important at this yard. As Mr. C. A. Guynn, Master Mechanic, told us, "If one of these ropes should break, 50 tons of steel would *drop!* It would endanger over 150 workmen and do untold damage to a $10,000,000 ship. And then there'd be the tremendous expense of an idle machine, and the cost of replacing the rope. We just can't take a chance with safety.

"That's why we always specify a first grade rope like Tiger Brand—the best we can get. It would be unthinkable even to consider a cheaper rope!"

As for service, Mr. Guynn said, "We leave a Tiger Brand Rope in service about a year before we replace it. That's a fine record when you remember that these machines are in *constant use* and that we always remove the rope long before it can give trouble. On a machine that isn't in constant use, we could use the rope for 4 or 5 years."

The Right Wire Rope
will do the trick!

SEND FOR FREE BOOKLET. You can get exceptional service on any job from the right Tiger Brand Wire Rope. Its construction, grade, and the tough open-hearth steel from which it is made, provide the special properties you need.

Make sure of getting the right Tiger Brand Rope by following the recommendations in our guide book, "The Right Rope for the Job." It lists the best rope for hundreds of typical applications. Send the coupon now for your free copy.

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Please send me, without obligation, a copy of your helpful wire rope recommendation book, "The Right Rope for the Job."

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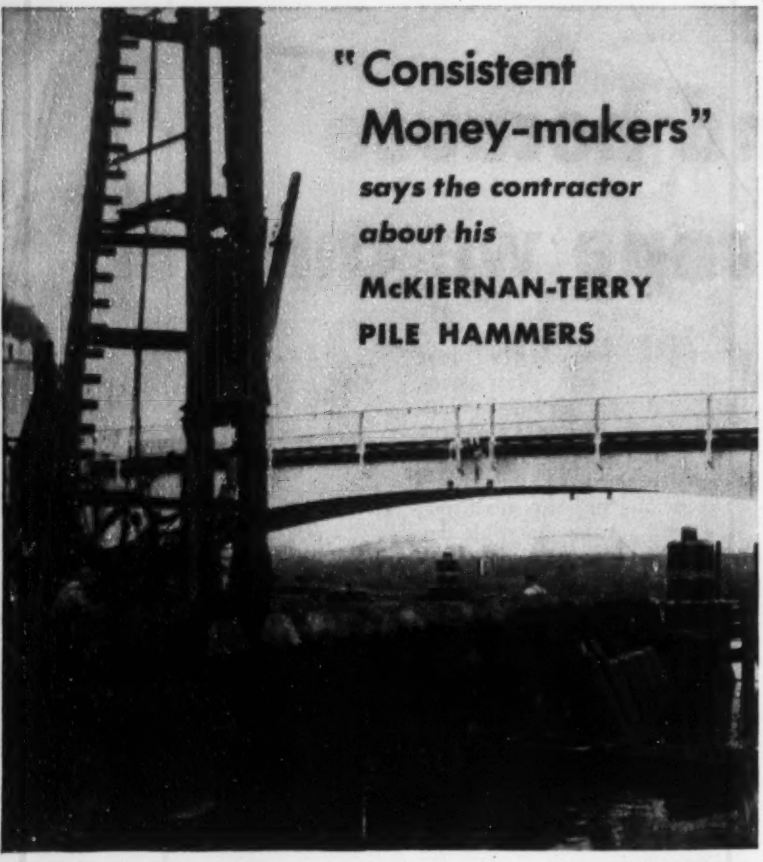
UNITED STATES STEEL


"Consistent Money-makers"
says the contractor about his
McKIERNAN-TERRY PILE HAMMERS

The Spence & Howe Construction Company of Port Arthur, Texas, is one of thousands of contractors who have profited by using powerful, fast-acting McKiernan-Terry Pile Hammers. President O. B. Hartzog reports:

"Our two McKiernan-Terry Pile Hammers have always performed beyond expectations and with a minimum of maintenance. They have consistently made money for us, particularly on jobs involving batter piles and difficult places to maneuver heavy pile driving equipment, such as under existing bridge spans, inside of buildings and close to existing refinery units."

Write for bulletins describing the money-making McKiernan-Terry Pile Hammers.

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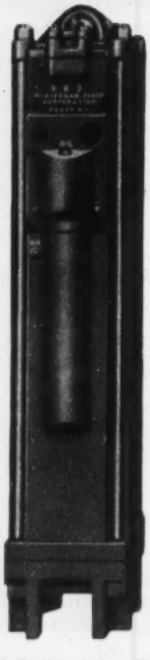
McKIERNAN TERRY



9B3 Double-Acting Pile Hammer, included in the McKiernan-Terry line of 18 sizes of double-acting and single-acting hammers and double-acting extractors

MEN AND JOBS

Speaking not necessarily of your own organization, but from your wide knowledge of waterworks management, would you tell us whether the profession is getting its needed share of bright young men?

"The waterworks profession is gradually getting younger people interested in the business, and I believe that this is one of the really important problems to which waterworks administrators should give serious consideration."

Do all waterworks need to have engineers on their staffs?

"I believe that any plant not large enough to support competent engineers, both civil and sanitary, should avail itself of the services of competent consulting engineers who have a wide view and perspective of the industry as a whole. These engineers should be called upon to advise regarding rate structures, building programs, etc. The average size water plant ordinarily is not in a position to have engineers on its payroll that are capable of designing and planning properly for the future, taking into consideration all the modern aspects of the waterworks profession."

Is the problem of finding tomorrow's waterworks administrators more critical, in your estimation, than the separate problem of finding technicians and subprofessionals to stay in subordinate jobs.

"I am of the opinion that the well operated waterworks should give its employes an opportunity to advance in the profession and wherever ability is found should see to it that technicians have a chance to go forward toward the administrative end of the business."

What can the individual waterworks man do to attract to his business the type of engineer it needs?

"He should use his effort and knowledge to instigate actuarially sound pension systems, accident and health benefits, and other things that might attract engineers to the profession, especially if such engineers and technicians realize that they would work for an institution that would give them security in old age, not only for themselves, but for their families."

You now assume presidency of AWWA after many years of work on its committees concerned with employe and administration problems. What has AWWA done to attract needed young men to the industry,

(*Continued on page 85*)

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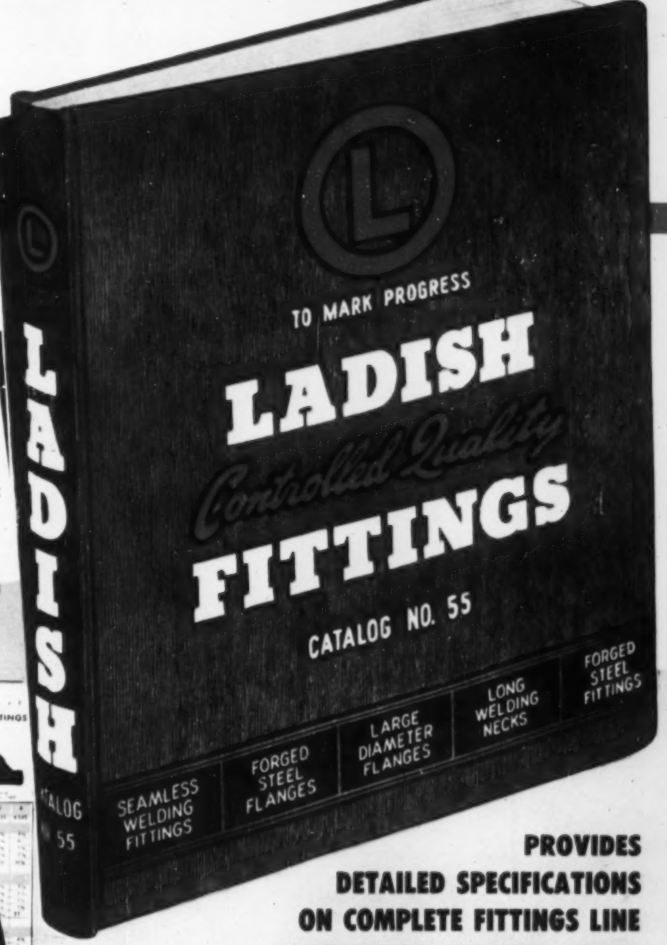
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THROUGH 2500 POUNDS PRESSURE RATING
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Available in Standard through Double Extra Strong weights... in sizes ½ through 42 inches.

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Available in a complete range of types and pressure ratings... in sizes up to 160 inches in diameter.

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Available in 150 through 2500-pound pressure ratings ... in sizes from 1 through 24 inches.

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Available in diameters up to 240 inches in a wide variety of forged contours... in weights up to 40,000 pounds.

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Screwed and Socket-Welding types in 2000 through 6000-pound pressures, sizes ⅛ through 4 inches.

12 PAGES STAINLESS AND ALLOY FITTINGS
Featuring data on properties of materials and a comprehensive table of piping specifications.

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To The Owner and Architect—

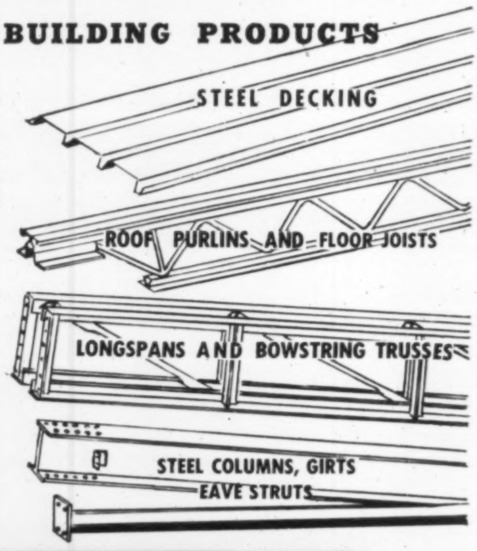
The Most Important Thing is

A BUILDING *Designed*

TO THE OWNER'S EXACT NEEDS

This is the **BASIC ADVANTAGE** when you design with

MACOMBER STANDARDIZED STEEL BUILDING PRODUCTS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• ENGINEERING • FABRICATING AND ERECTING •

what is it doing now and what more can it do?

.."Within the last few years a great deal has been done to attract needed young men. For the future, we think that public relations is of outstanding importance in our business. It has been neglected, and we are planning to do everything within our power to bring before the general public the importance of the waterworks industry. Develop good public relations within the community and the general public will stand behind the waterworks management to the end that adequate rates are in force, and that moneys collected for water service will not be diverted to other channels but will be used to improve and develop the waterworks system. Droughts in various parts of the country in the last few years have alerted the people to realize the importance of assisting the waterworks manager in his many daily problems."

(*Men & Jobs continued on page* 87)

Heads Asphalt Institute

J. E. Buchanan will leave his post as president of the University of Idaho on July 1 in order to take on a new assignment—successor to Bernard E. Gray as president of The Asphalt Institute. Buchanan, who joined the university's teaching staff in 1927 as an instructor in civil engineering, was elected dean of the college of engineering in 1938 and university president in 1946. Part of his practical engineering experience was gained from jobs with construction firms, as testing engineer in charge of the materials testing laboratory of the Idaho bureau of highways, and service with the Corps of Engineers during World War II.

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AMERICA'S STANDARD FOR OVER 32 YEARS

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On complicated 3-sided cofferdam for the $5 million East Bronx Unionport Bridge Construction.

Says John Ury, Project Manager for Contractors:

WM. M. MOORE BUILDING CORP.
and
LOPIER CONSTRUCTION CORP.
75 West 190th Street
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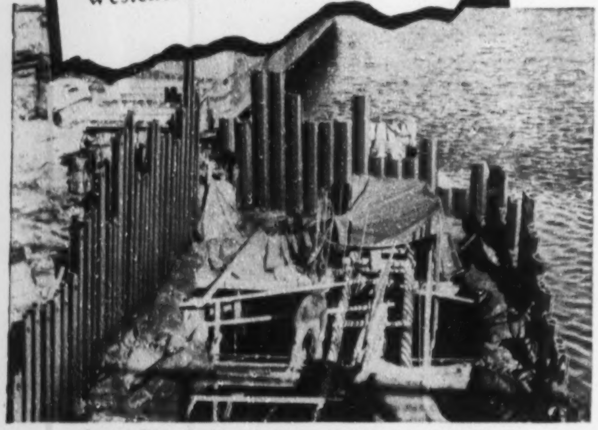
Construction started in 1949, and skillful driving of 30 to 45 ft. Interlocking Steel Sheet Piling by these 2 contractors made this an economical, successful job. Unionport Bridge crosses Westchester Creek in East Bronx.



Rental Piling had to be driven considerably below the bed of the creek, with extra reinforcing to protect against swells.

An interesting installation of piers had to be constructed atop 35-year old existing caissons. Here was a tough water seepage problem in a complicated 3-sided cofferdam — approximately 1,000 gpm had to be pumped out of the cofferdam by two 6-inch pumps. Steel Sheet piling was needed — on time — in the exact section and lengths (30 to 45 feet). And Foster had it — just what the job required. A phoned order — a prompt delivery, a dependable quality — and a low cost, requiring no huge purchase investment on the part of the contractor, made FOSTER RENTAL PILING the 100% answer for this job.

Let us quote you on our low-cost Piling Rentals —prompt service from 5 Foster warehouses. Free Piling Catalog illustrating diagrams of all standard makes of piling sections is available.

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RAILS—TRACK EQUIPMENT • PIPE • WIRE ROPE

L.B. FOSTER co.

Corps career ends

Robert Hickson retires after 46 years service

Robert E. Hickson, the man whose engineering skills are reflected in virtually every Corps of Engineers project on the Columbia River, sheathed his slide rule April 30 to retire after 46 years of government service.

For the last three years Hickson has been chief of construction for the North Pacific division. Before that—for 43 years—he was construction chief for the Portland, Ore., district office.

He supervised work on such Columbia River projects as Bonneville, McNary, Chief Joseph and The Dalles dams, as well as scores of smaller jobs in Alaska, Washington and Oregon. But he considers construction of the world's largest jetties (8,000,000 tons of rock fill) at the mouth of the Columbia as the most valuable civil works during his service.

Before attending engineering school at the University of Oregon, Hickson worked on railroads and irrigation projects. After graduation—in 1909—he entered the Engineer Corps.

As a young engineer he worked on The Dalles-Celilo canal, a waterway which will be inundated by The Dalles Dam pool. At the same time, he championed deepening the lower Columbia shipper's channel from 20 to 35 ft, and the Columbia bar entrance from 24 to 44 ft.

Pacific shipping interests and Columbia basin port officials credit Hickson's advocacy of jetty, channel and dike work for much of the importance of the river as a world shipping center.

Taking over Hickson's post with the North Pacific division will be Samuel G. Neff, chief of the construction and operations division of the Walla Walla, Wash., district office. His Corps career started in the Kansas City district. In later assignments he served as assistant engineer at Fort Peck, chief of operations at Denison Dam, principal civilian engineer in charge of Newfoundland military construction, division engineer at Providence and Kansas City, and construction chief of Cherry Creek Dam in the Denver district. He was transferred to Walla Walla in 1949.

Reclamation Bureau chief chosen for Pakistan post

Avery Batson, former director of the Bureau of Reclamation's Region 7 in

(Continued on page 90)

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for the BUILDING CONTRACTOR
and for HIS CUSTOMERS

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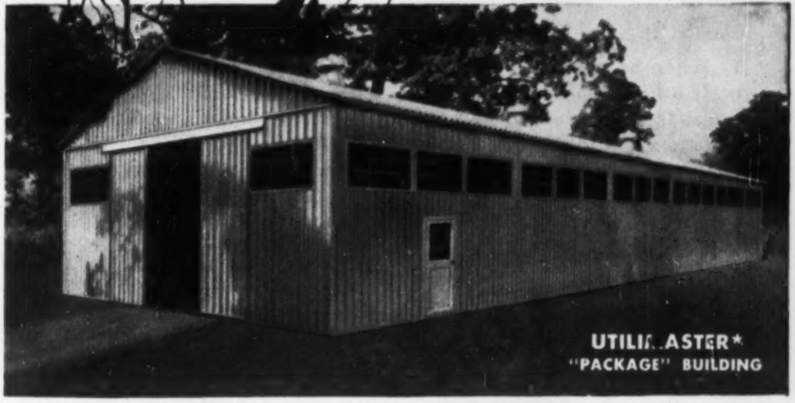

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"Utilimaster" package buildings are available in spans of 40′, 50′, or 60′ in any length in modules of 20′. High strength, welded rigid frame design provides maximum strength at points of greatest stress . . . eliminates interference from overhead beams and supporting columns. Siding and roof can be of time-proven Ideco deep-rib galvanized steel sheet, aluminum or translucent Corrulux. All exterior steel is galvanized for rust-prevention . . . interior structural members are painted. Complete insulation is optional.

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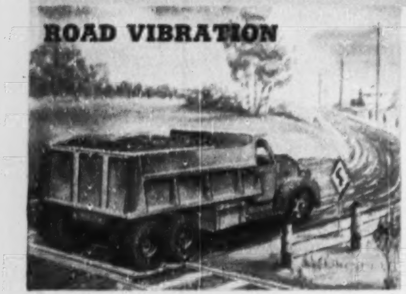
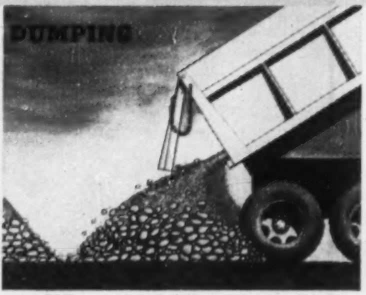
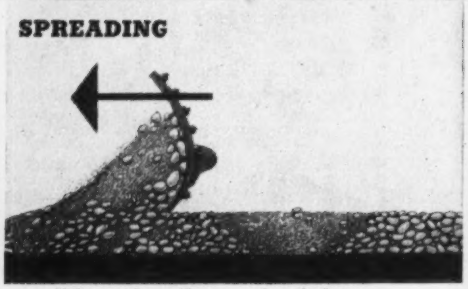
HOW GRAVEL SEGREGATION IS CAUSED . . .


ROAD VIBRATION

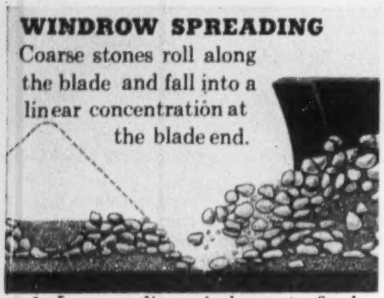
1. When aggregates are transported the bumping and vibration causes the fines (dust, small particles and chips) to sift to the bottom of the load while the larger stone works toward the top and sides.


DUMPING

2. When the load is dumped on the roadway, the material forms in piles. The larger stones roll from the truck first, the fines fall last. The segregated condition is now reversed; the coarse aggregates are in the base of the pile.

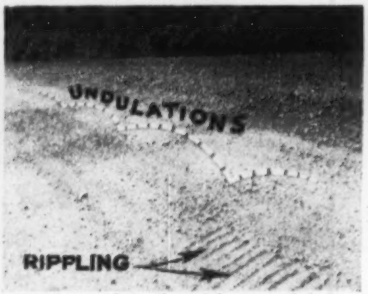

SPREADING

3. When the piles are leveled to specified depth, alternate pockets of fines and coarse are formed. Such segregation is highly unstable and a base course so constructed would soon ravel and break up.

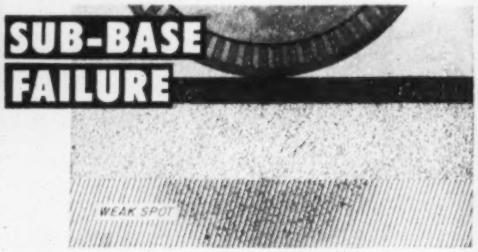

WINDROW SPREADING

Coarse stones roll along the blade and fall into a linear concentration at the blade end.

6. In spreading windrows to final crown and grade, a different but very unstable segregation is caused. Fines are found in concentration in the "heart" of the windrow. Some of these remain in a pocket; others sift to the bottom. Stones which are "topped" by the blade, are rolled to the surface.

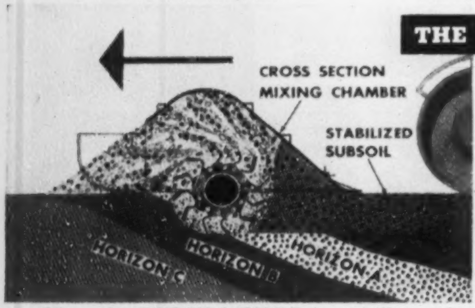


7. A road built with gravel in a segregated condition soon develops rippling, undulations, and a "wash-boardy" condition. Traffic keeps those non-keyed stones in motion. Rain trapped in the hollows seeps through and weakens base and sub-base. Freezing and thawing complete the destruction.

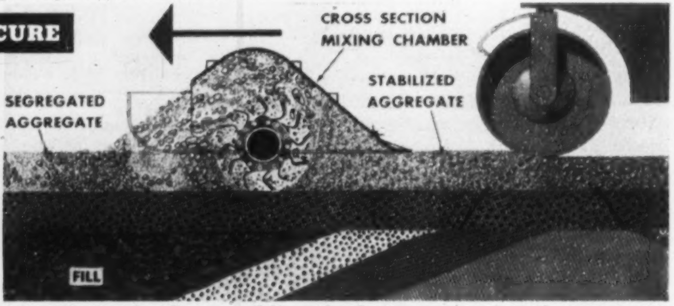

SUB-BASE FAILURE

8. SUB-BASE failure is frequently caused by soils of different physical characteristics reacting unevenly to moisture. Here a weak spot is developing just below the base course. This would not occur if sub-base had been processed to blend the soils and eliminate voids.

THE CURE

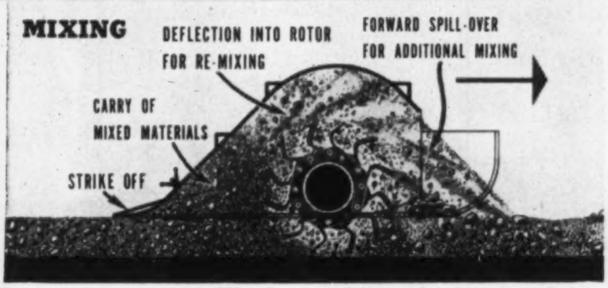


12. Here the PULVI-MIXER is stabilizing the sub-base by blending the sub-grade soil horizons (A, B, C,) to attain a course which is uniform in moisture, density and thickness. Weak spots such as that shown in the previous four diagrams will not occur and therefore the base will not require maintenance.

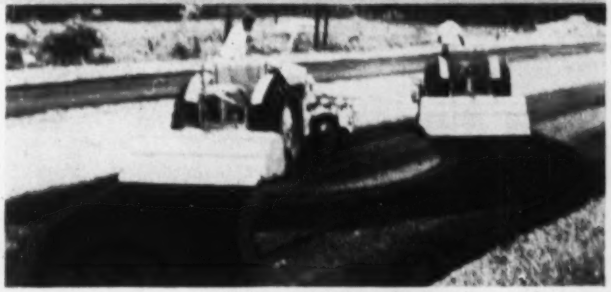


13. Above, the Seaman Mixer is shown processing the aggregate for the base, correcting an always-present segregated condition. The material has previously been shaped to final crown and grade. No further blading is needed, for the PULVI-MIXER not only completes the mix but also leaves it in a partially compacted condition, exactly to the grade established, ready for final rolling. This partial pre-compaction is needed because materials left too fluffy are subject to segregation during compaction.

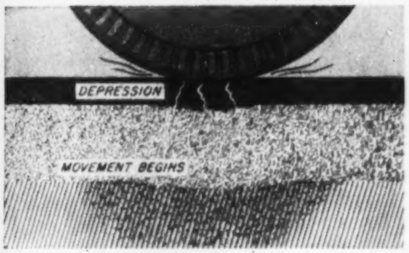
. . HOW THE SEAMAN MIXER CORRECTS IT


MIXING
DEFLECTION INTO ROTOR FOR RE-MIXING
FORWARD SPILL-OVER FOR ADDITIONAL MIXING
CARRY OF MIXED MATERIALS
STRIKE OFF

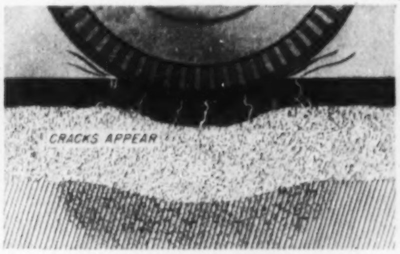
4. The Seaman Mixer blends out pockets of coarse and fines so that particles of each size, from dust up to the largest stone, are intermixed throughout the base. Voids are filled with fines to mortar-in the keyed and interlocked coarse material.



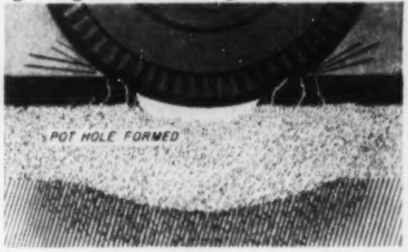
5. It is essential in eliminating pockets of coarse and fines to cross-mix as well as to mix in a longitudinal direction. Only the Seaman Mixer is capable of this operation which provides complete and uniform material placement, blending and gradation throughout the base.


DEPRESSION
MOVEMENT BEGINS

9. The breakdown of the sub-base through the disintegrating effect of moisture is reflected in a localized movement of the materials in the base.


CRACKS APPEAR

10. As traffic continues to pound the base, cracks develop and the sub-base is weakened further. Sub-base and base course deflections are unequal and the beam effect of the base is unable to carry the load.


POT HOLE FORMED

11. Complete breakdown of the base course above the sub-base failure has started a chain reaction as more moisture will permeate the fault and establish repeated breakdown cycles along the width and length of the pavement.

SEAMAN TRAV-L-PLANT. Equipped with pump, tachometer, volumetric meter and spray bar for closely controlled application of bituminous binders or water.

For a complete description of the SEAMAN TRAV-L-PLANT and the SEAMAN Self-Propelled Mixer, write for Bulletin TPS. Send a postcard today.

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UNIVERSAL MANUFACTURING CORP., Zelienople 3, Pa.

Denver, leaves for Pakistan this month as a member of a Ford Foundation team of advisers.

Batson—who has been chief of the bureau's reports coordination branch in Washington, D. C., since last January—will advise Pakistan on water control and use, irrigation and hydroelectric power. His main job will be to correlate a number of projects already started or planned.

Under an agreement with Pakistan, Harvard University recruits experts for the advisory jobs while the Ford Foundation finances work through a grant of $450,000.

The latest team—8 Americans and Canadians trained in such fields as economics, agriculture and industry—will be staff advisers to the Planning Board of Pakistan. This government agency was set up last July to seek a five-year plan for developing the country's resources.

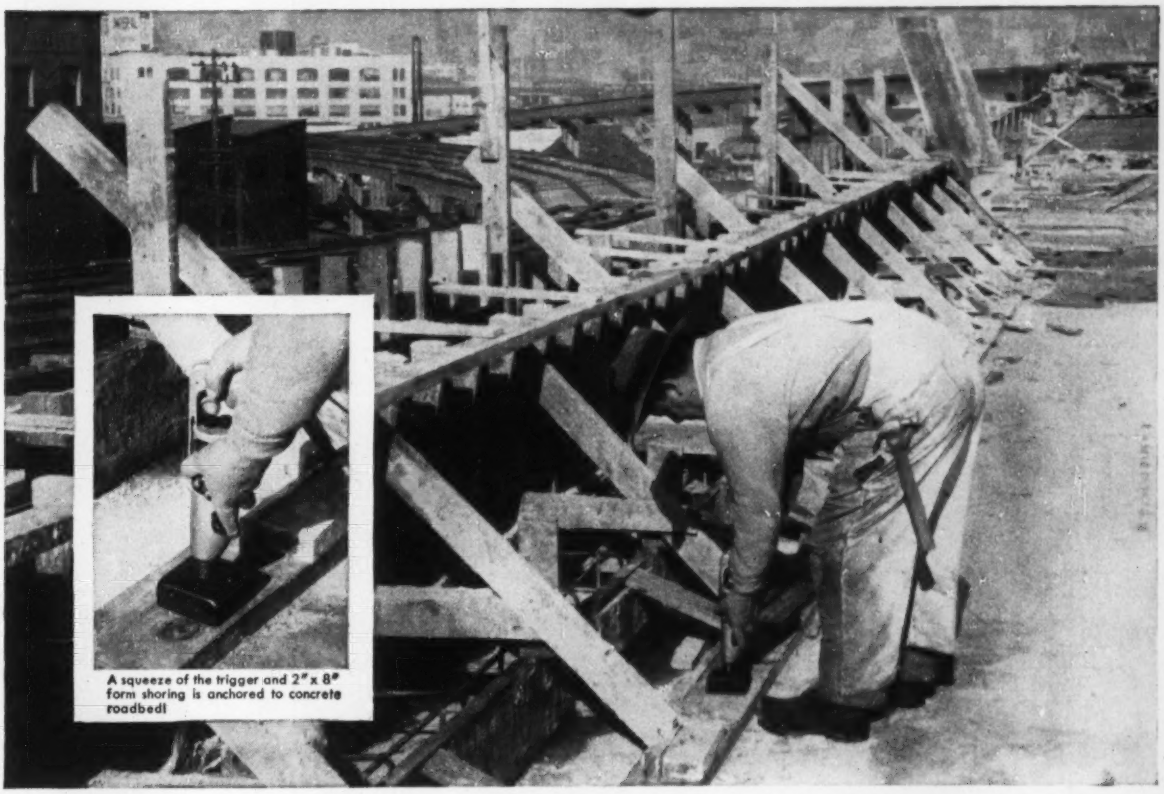
Batson—a 1927 graduate of the University of Nebraska—worked in Nebraska on various engineering projects until 1943, when he joined the Bureau of the Budget. A year later he began his career with the Reclamation Bureau. While director of Region 7, Batson was in charge of a construction program averaging about $50 million annually plus an operations program from partially completed systems having about $4 million in revenues a a year.

Career briefs . . .

• **Fills federal post**—Peter A. Strobel partner in the New York City consulting engineer firm of Strobel & Saltzman, reportedly will succeed W. E. Reynolds as Commissioner of Public Buildings in the Central Services Administration. Strobel—chief structural engineer for the New York World's Fair in 1939—has worked at top levels with the Corps of Engineers and the Atomic Energy Commission.

• **Engineer Corps promotions**—Col. Carl Y. Farrell, assistant Alaska district engineer for the Corps of Engineers at Anchorage, has been promoted to district engineer. He succeeds Col. Louis H. Foote, who will assume new duties as North Pacific division engineer at Portland, Ore.

• **Spokane city engineer**—A 44-year-old veteran of the Spokane, Wash., engineering department—Benjamin J. Garnett—has been promoted to city engineer, succeeding retiring Charles E. Davis. Barnett, former city bridge engineer, has been Davis' assistant since 1952.



A squeeze of the trigger and 2" x 8" form shoring is anchored to concrete roadbed!

REMINGTON STUD DRIVER speeds fastening job on West Coast Highway

TEMPORARY ANCHORING OF FORMS TO CONCRETE can be time-consuming and costly—but it wasn't that way on the new San Francisco Freeway. Here, the Remington Stud Driver did the job in record time by setting up to 5 fastening studs per minute!

The forms were used for pouring the Freeway's railings and curbings after the concrete roadbed had set. A workman simply moved down the base strip with the Stud Driver, and it was securely fastened! When the curbing was in, the forms were removed and the studs broken off below the concrete surface. The small craters that remained were smoothed over with grout.

SAVINGS UP TO 80% IN FASTENING COSTS ARE NOT UNCOMMON with the Remington Stud Driver. Its speed, light weight (6 lbs.), and freedom from wires and hose make it ideal for all kinds of construction fastening. Find out how *you* can save with this powder-actuated tool by mailing the coupon below.

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Remington DU PONT

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QUESTION: What caliber cartridge powers the Stud Driver?

ANSWER: 32 caliber power loads are available in six grades, each designed for your specific fastening requirements.

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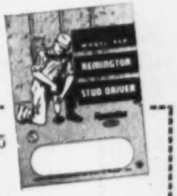

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"I get these Heaped Loads every cycle!"

Paul Crawley, fast-moving Illinois contractor, tells how he moved 197,700 cubic yards in 13 days.

"It takes more than luck," says Paul Crawley, Edwardsville, Ill.; *"when you start a big job three weeks behind schedule—and catch up in two short months!*

"We did it with a team of top operators and mechanics, using the right kind of equipment for the job."

After being held up for 3 weeks by heavy rains, Crawley's fast-moving crew went into action May 1. Soon they were putting a heaped load on the Cahokia Levee every 20 seconds. In one 13-day period, they moved 197,700 cubic yards. By July 1 they had caught up—were actually three days ahead of schedule!

If you have dirt to move, with time and costs to consider, see the man who can help you most—your IH Industrial Distributor. Ask him about rugged, simple INTERNATIONAL "Job-Phased"* equipment that does such an outstanding job for contractors.

Loadin' on the levee for the Cahokia Creek Diversion Channel, near East St. Louis, Ill., one of Paul Crawley's three INTERNATIONAL TD-24 crawlers with INTERNATIONAL B-170A scrapers walks away with a heaped load to help make time on a tight schedule. The excellent flotation of the INTERNATIONAL Scraper, its fast fill, short turning radius, remarkable stability and fast, clean dumps were big factors in Crawley's great record on this job.

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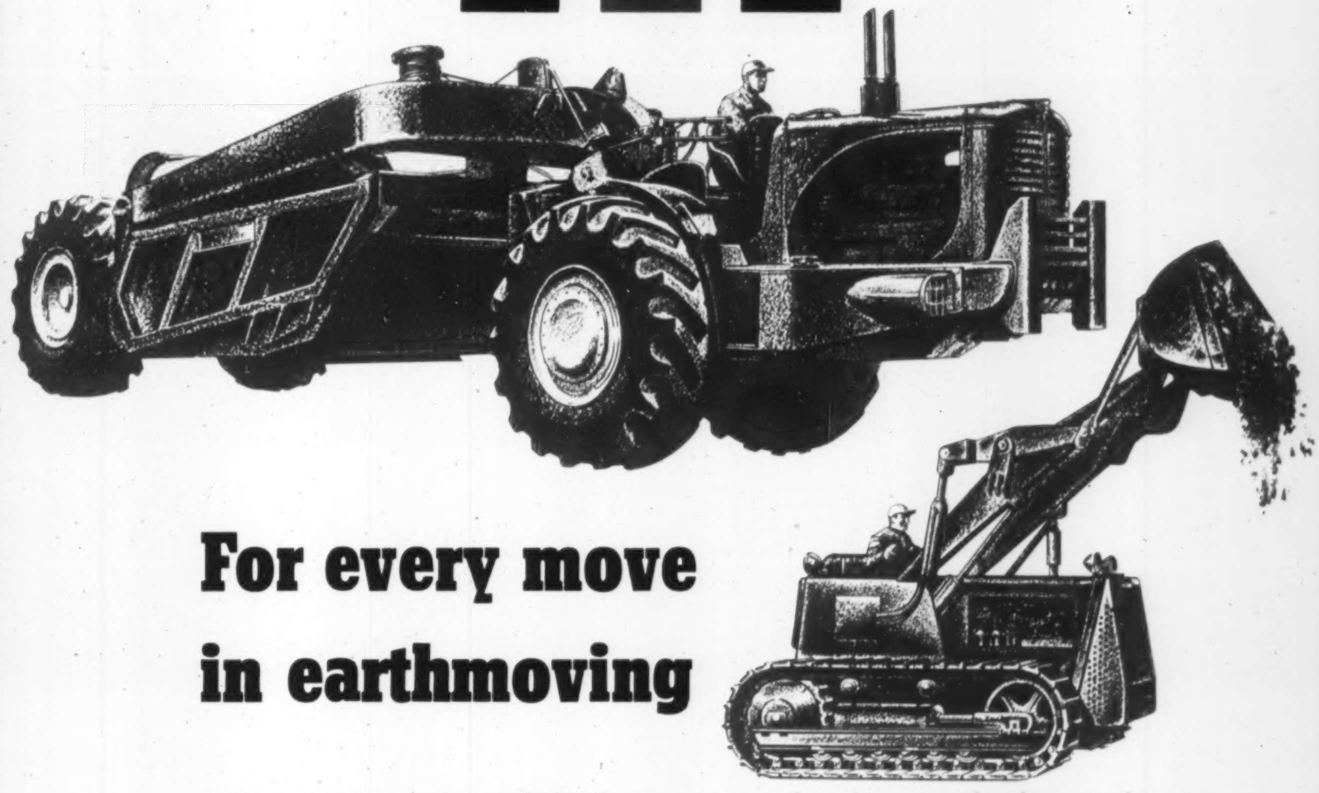

For every move in earthmoving

INTERNATIONAL Industrial Distributors are your headquarters for the complete INTERNATIONAL line of modern earthmoving equipment, led by the INTERNATIONAL TD-24, world's most powerful crawler, and by the INTERNATIONAL two-wheel, rubber-tired tractors with scrapers and bottom dump wagon.

For proof of INTERNATIONAL performance, call your INTERNATIONAL Industrial Distributor today. Get the low-down on low-cost earthmoving on your own job—with a demonstration whenever you say.

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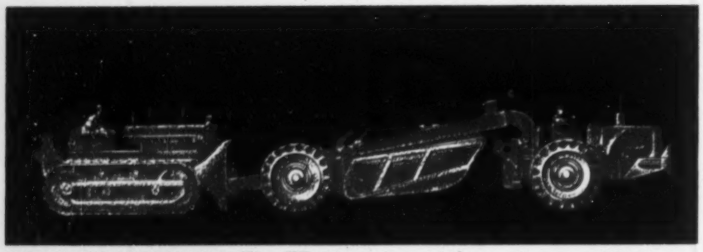
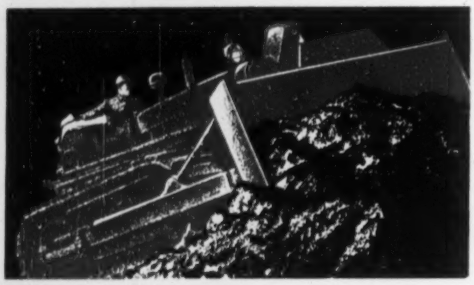
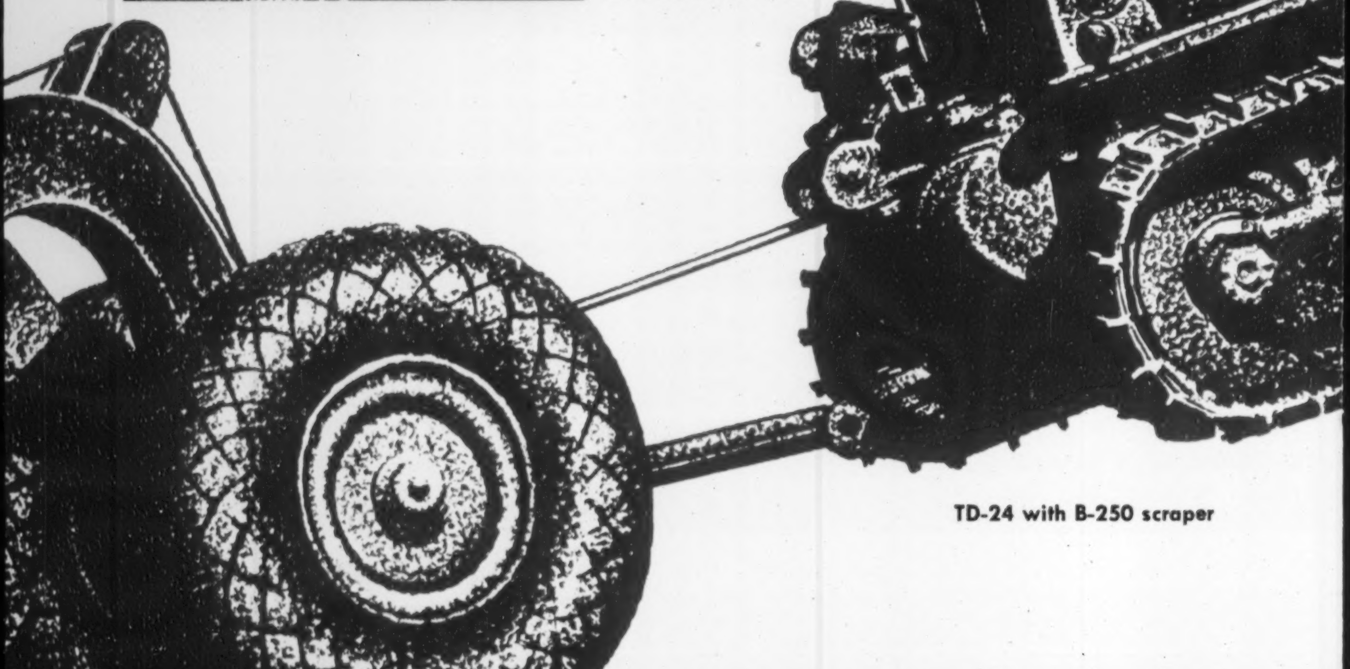
The Champ is



BEST IN THE BORROW PIT. The TD-24 sets record for work accomplished as a push-loader . . . for putting those *heaped* loads in every haul unit . . . for fast maneuvering from scraper to scraper.



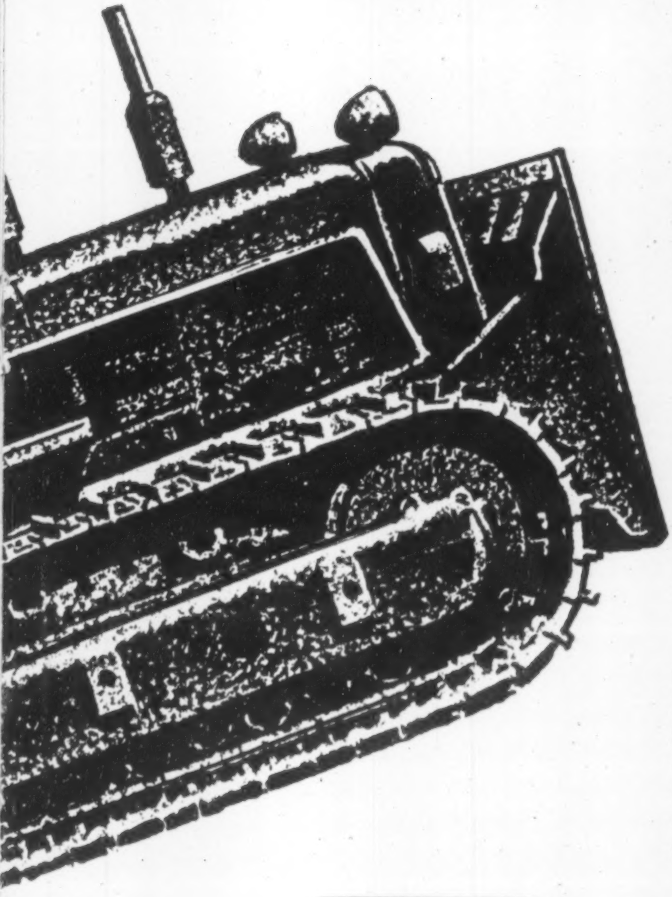
FAST PASS. New TD-24 power—155 drawbar horsepower—pays off on every pass with bigger loads and fast time cycles.



TD-24 with B-250 scraper

Still CHAMP

INTERNATIONAL TD-24 crawler at 155 drawbar horsepower heads a complete equipment line for every move in earthmoving



Now International steps up the power of the most powerful crawler in the world! The TD-24, "The Champ" of crawler power now packs even higher work rating—155 maximum drawbar horsepower.

"The Champ" has been setting performance standards for years with its production-boosting combination of power, speed and stamina. It heads this complete INTERNATIONAL equipment lineup for every move in earthmoving:

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- **Four 4-wheel scrapers.**
- **Two high-speed, two-wheel, rubber-tired tractors with scrapers (13 and 18-yard heaped capacity).**
- **A high-speed, two-wheel, rubber-tired tractor with bottom dump wagon (20-yard heaped capacity).**
- **Five front-end loaders, for the TD-6 through the TD-18A—tops for speedy break-out and loading of all types of materials.**

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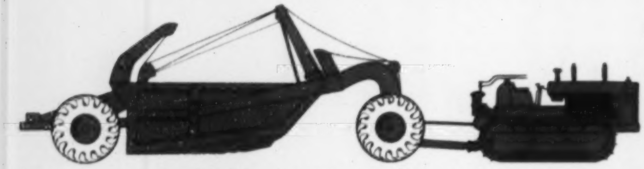
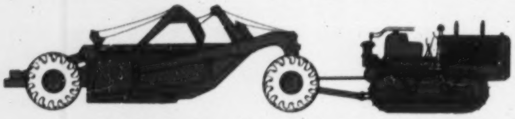
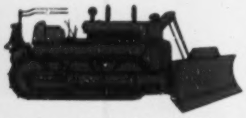


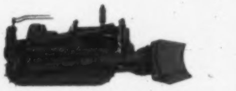
TD-24 crawler with matched scrapers



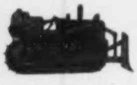
TD-18A crawler with matched scrapers



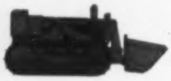
TD-24 crawler with BULLGRADER



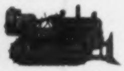
TD-14A crawler with cable BULLGRADER



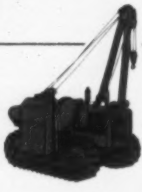
TD-9 crawler with hydraulic bulldozer



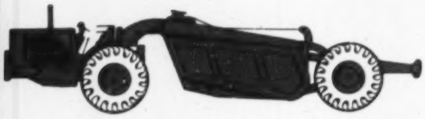
TD-9 crawler with front-end loader



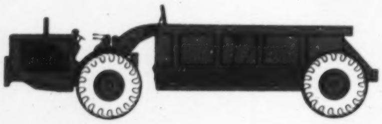
TD-6 crawler with hydraulic bulldozer



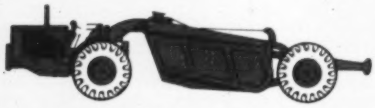
TD-18A crawler with sideboom



Model 2T-75 two-wheel, rubber-tired tractor with 18-yard heaped capacity scraper



Model 2T-75 two-wheel, rubber-tired tractor with 20-yard heaped capacity bottom dump wagon



Model 2T-55 two-wheel, rubber-tired tractor with 13-yard heaped capacity scraper

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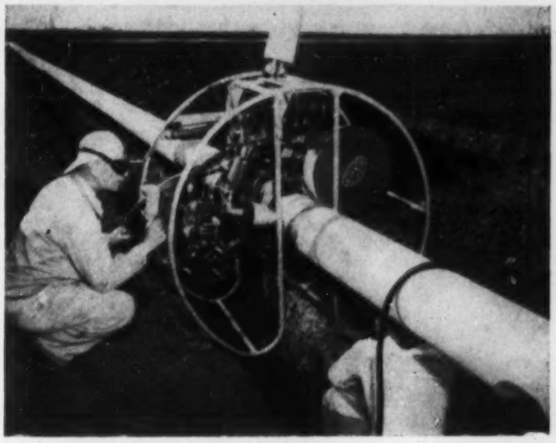
AUTO BUMPER JACKS were used to line up the 40-ft lengths of pipe which were then clamped in alignment and tackwelded at three points with a standard welding gun.



WELDING MACHINE is of the rotating type using argon gas at the arc. Welds made with it are reported 25% stronger than those made with standard methods.

Automatic aluminum pipeline welder tested

A new portable automatic welding machine has been undergoing tests on what is said to be the longest aluminum pipeline built to date—the 12-mi high-pressure line between the White Point gas field near Corpus Christi, Tex., and the Reynolds Metals Co. LaQuinta alumina plant..

The machine welded 40-ft sections of $8\frac{5}{8}$-in. aluminum pipe in an average time of 4 min for a five-pass weld—compared with about eight minutes or more for hand welding. Suspended over the line by a side boom, the automatic welder is equipped with quick-acting clamps that grip the pipe securely.

Pressing a button starts the welding and automatic controls maintain proper conditions at the argon-submerged arc. When the weld is complete, the machine automatically stops, reverses itself and returns to the starting position. The clamps are then released and the machine moved to the next weld.

The welds made during the laying of the high-pressure link were subject to pressure as high as 1,800 psi and tested satisfactorily. It is believed that the automatic machine will prove to be one of the final steps toward making the light weight pipe competitive with the steel product.

The welded line was coated with a primer and $\frac{3}{32}$ in. of bitumastic enamel. This was followed by a fiber glass wrap and 60-70-lb kraft paper. It is pointed out, however, wrapping of aluminum pipe is unnecessary in many instances.

The Corpus Christi application is the first full-scale use of the newly developed machine. Short test lines with smaller diameter pipe were laid earlier for the Alabama-Tennessee Natural Gas Co. at Listerhill, Ala. and at Jal, N. M. for the El Paso Natural Gas Co. Both these installations also proved successful.

The machine is undergoing further development and testing by the Reynolds Metals Co. in conjunction with Air Reduction Sales Co.

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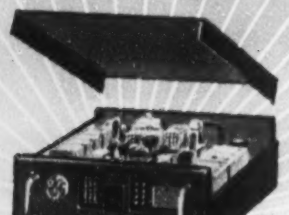

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✓ **SELECTIVITY GUARANTEED FOR LIFE...** New multi-coil IF transformers. Compare G-E specs *with any other!*

✓ **RESERVE POWER** at the station—40 watts output on all station equipment—continuous duty rating.

✓ **FULL 6/12 VOLT OPERATION.** Mobile unit functions from 6 or 12 volt source.

✓ **HIGH-Q CAVITIES** at *both* receiver input and output—your best insurance against TV interference.

✓ **4-CHANNEL OPERATION . . .** Here's *positive* assurance of performance on different frequencies!

✓ **290 KC LOW IF**—the right IF for mobile radio equipment!

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TODAY, as always, General Electric stamps its products with a quality brand. Here is not just another piece of mobile radio gear to satisfy consumer need . . . here is a standard of performance for the industry to follow. IF tuning . . . guaranteed for life! Your interests deserve nothing less than the criteria G.E. has established for mobile radio performance.

Examine every feature of this outstanding 450 MC equipment. Compare *power . . . reliability . . . maintenance requirements . . .* because the story of G-E's superior design is right there for all to see . . . for all to take advantage of. Get the G-E 2-way radio story today!

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FIELD AND OFFICE

Crane on the roof

Rooftop crane set up to erect building addition

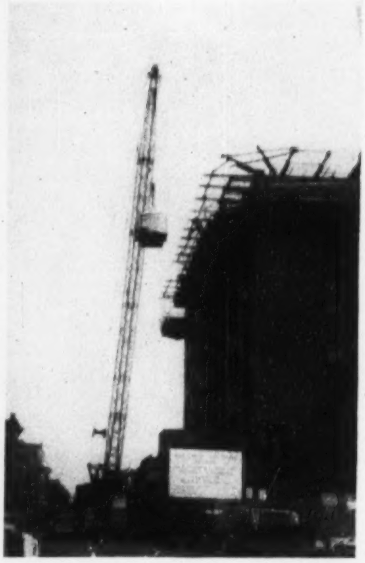
Acorn Iron Works, structural steel contractors, were confronted with the problem of erecting about 400 tons of structural steel for a 3-story addition atop a 6-story building in downtown Detroit, Mich. The location and other specific conditions of the job made it impracticable to erect this steel directly from the ground or by means of a stiff-leg derrick from the roof.

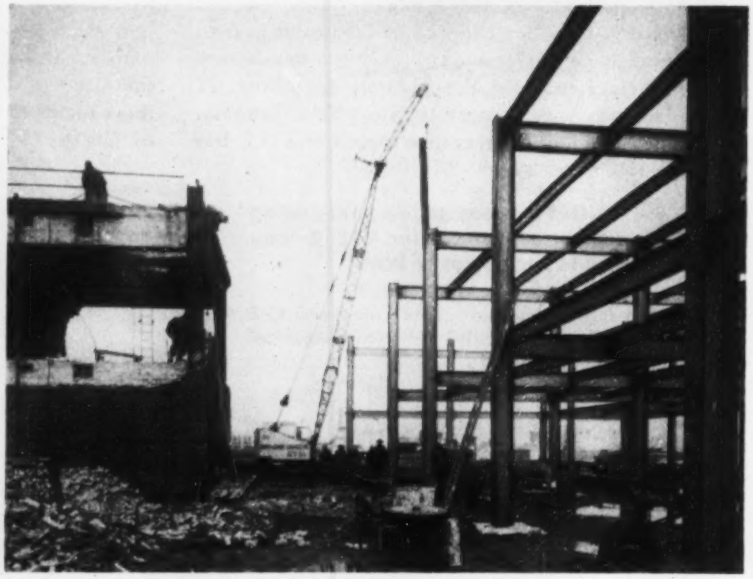
However, the erection of the steel was successfully performed by means of a 10-ton Lorain Moto-Crane lifted to the roof of the building. A 45-ton crane equipped with a 120-ft boom was used to elevate the smaller rig to its 70-ft perch.

The cab of the 10-tonner was lifted from its truck and bolted to a $3\frac{1}{2}$-in., steel plate. It was then raised to roof level and placed on a runway made of 12-in. H-beams. The beams were rested on rollers so that the equipment could be moved back and forth. A cable from the crane tied to a nearby solid support—such as a column or concrete pier—permitted the crane to move by its own power.

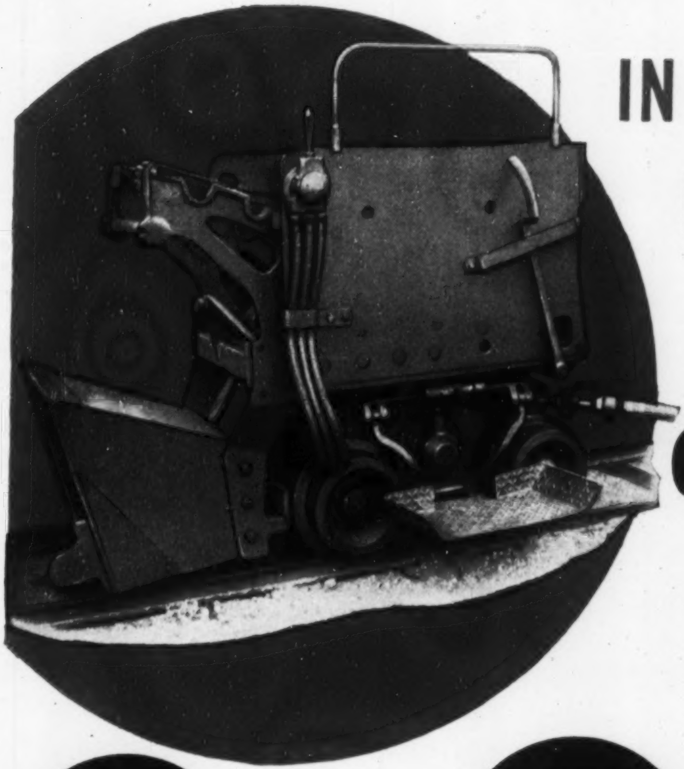
The Moto-Crane was equipped with a 50-ft boom and 15-ft jib for the steel erection. N. O. Saulter, Chief Engineer, Acorn Iron Works, Inc., 9260 Freeland Ave., Detroit 28, Mich.

(*F&O continued on page 104*)





NOTHING LIKE IT



IN THE MINE CAR LOADER FIELD!

NEW GARDNER-DENVER GD10

NEW CONVENIENCE! Naturally positioned controls . . . quickly and easily moved to either side.

NEW SAFETY! Low center of gravity . . . high flange wheels . . . for greater stability on the rails.

NEW CAPACITY! One-piece, large-capacity dipper . . . rounded bottom for self-cleaning.

NEW OILING ROUTINE! Only two points to check . . . both take the same commonly available oil.

NEW FEATURES BY THE DOZEN! Write for details.

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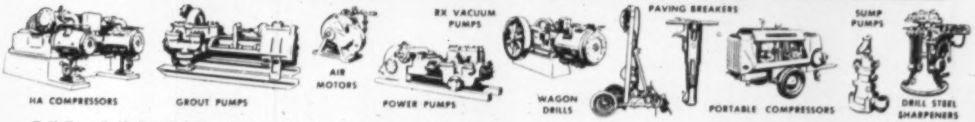
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EXTRA PAYLOADS pay off in EXTRA PROFITS

TWO SCRAPERS may have the same rated capacity, the same top speed and even the same rated horsepower . . . why is one just a marginal producer and the other a real money maker?

Before you buy any equipment, check with owners about maintenance costs, yardage production, downtime for repairs, and actual job performance and you'll have the answer. Contractor preference for "Euc" Scrapers—fastest growing scraper line in the industry—is based on exceptionally high job availability and productive capacity. Less downtime means more yards per day and lower costs per yard.

It's the week by week performance—not "hot rod" demonstration figures—that has made "Eucs" an important part of the profit picture for so many leading contractors, large and small. Have your Euclid Distributor give you the facts soon.

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Euclid Equipment

FOR MOVING EARTH, ROCK, COAL AND ORE

GENERAL MOTORS

"EUCS" KEEP NORTH CAROLINA JOB WELL AHEAD OF SCHEDULE

Hertford & Cecil are using 7 Euclid Scrapers, five 15.5 cu. yd. and two "Twins" of 18 yd. struck capacity, to move most of the million yds. on a rush project for the Corps of Engineers in North Carolina. The job has a one year deadline but was nearly 50% complete in 90 working days—the productive capacity and versatility of the combination Euclid fleet really made the dirt fly! Material ranged from wet sand to tough hardpan laced with cypress roots and stumps. Hauls average a mile over roads with high rolling resistance—often exceeding 15%. The power and traction of "Euc" Scrapers and their rugged dependability has enabled these contractors to set a fast pace on a difficult job that seemed impossible for large capacity self-powered scrapers.

ANOTHER MISSOURI BASIN DAM BUILT WITH "EUCS"

Excavation for Tiber Dam in Montana will exceed 15 million cu. yds. which must be moved in three working seasons. James-Wunderlich Construction Co. is using a fleet of 25 "Eucs", eight 15.5 cu. yd. scrapers and seventeen 25 cu. yd. bottom-dumps to haul from three borrow pits as far as 2.8 miles from the dam. Five of the scrapers are top loaded by a 5 yd. dragline that excavates impervious fill material from the outlet channel. Average hourly production of each scraper on a 2200 ft. haul is 90 bank yds. of material weighing 3200 lbs. per bank yd. Excellent job availability and minimum downtime of the "Euc" Scrapers is paying off in extra production and lower costs.

The Bottom-Dump fleet is now on its third major dam project since 1947, having worked on Cherry Creek Dam in Colorado prior to moving 6 million yds. at Oahe Dam in South Dakota . . . further proof of Euclid stamina and dependability.

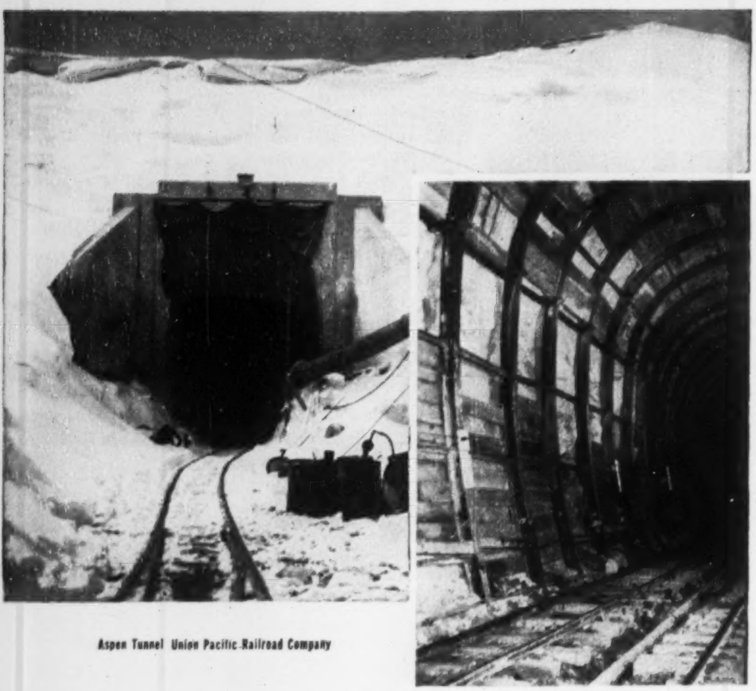
VERSATILITY IS THE WORD FOR THE EUCLID TWIN-POWER SCRAPER

It's four-wheel drive, no-spin differential, and total of 380 or 400 h.p. with Torqmatic converter and transmission provides ample power and traction for self-loading and high speed hauling of heaped loads up to 24 cu. yds. Contractor Bert Altfillich first used his two "Twins" for canal and levee construction on a flood control project at Long Beach, California. He then put them to work on land leveling for a large residential subdivision and is now completing a plant site grading job involving 250,000 cu. yds. of sand.

Owners in other sections of the country, too, are enthusiastic about this Euclid Scraper because of its efficiency and low cost dirt moving performance on road work, dams, airports, stripping and stockpiling operations . . . one of every three is a repeat order. ▼

"EUC" SCRAPERS . . .
FASTEST GROWING LINE
IN THE FIELD!

"Eucs" cut Down-Time and Maintenance Cost to new lows . . . proved on job after job.



Aspen Tunnel Union Pacific Railroad Company

You should erect "COMMERCIAL" Steel Timbers to speed completion of your tunnel construction and reduce cost . .

Several years ago a tunnel in the West was being driven through shifting ground. 12 by 12 wooden timbers placed skin tight were found inadequate to support the tremendous loads which developed. As one tunnel foreman so aptly said, "They are cracking like matches."

"Commercial" tunnel engineers were called in to design and build a steel tunnel support that would carry the load, thus enabling the tunnel to be completed, rather than abandoned.

Since those days "Commercial" steel tunnel supports have been used in many large tunnels. In fact there are so many advantages in steel timbers that today wooden timbers are rarely even considered. Steel tunnel supports can be designed to meet the load requirement. They are tailored to fit the job and completely shop fabricated. Erection by unskilled men can be made much faster. Fire hazards are vastly reduced and all workmen are given greater protection.

Notice in the above illustration the conformity of the curved steel timbers and how closely the excavation has been held to the neat concrete line. Savings due to reduced excavation yardage is very substantial.

In driving your next tunnel, let "Commercial" steel tunnel supports carry your load more safely and at lower cost.

THE COMMERCIAL SHEARING AND STAMPING COMPANY
YOUNGSTOWN 1, OHIO · CHICAGO, ILLINOIS · SALT LAKE CITY, UTAH

"COMMERCIAL"
"PRODUCTS PREFERRED BY CUSTOMER ACCEPTANCE"

"Commercial" engineers will gladly assist you; they have the experience and know how.

LINER PLATES · RIBS · SETS · LAGGING

LA-10

FIELD AND OFFICE

Core extractor

Job-built extractor cuts hazards, time and costs

The drilling of calyx holes at Oahe Dam near Pierre, S. D., has been speeded up in time and reduced in cost by a new type of core extractor devised by two Corps of Engineer employes.

On the 11 holes bored so far—each 30 in. in dia and 60 ft deep—the cost has been pared from a commercial price of $100 a ft to $30 a ft. In addition, the device eliminates the hazard to personnel who formerly had to be lowered for the mucking operation—the extractor's action is completely mechanical.

The extractor consists of two closely-fitting inner and outer steel shells and has a 30-in. o.d. and is 6 ft 10 in. in overall length. The inner shell is fastened to the drill rod of the drilling rig and the outer shell is supported by cables.

Procedure calls for a two-phase operation. A standard calyx bit is used to cut the core; then the bit is removed and replaced by the extractor. Hydraulic jacks on the drill rod exert a pressure of two tons to force the inner shell downwards inside the outer shell.

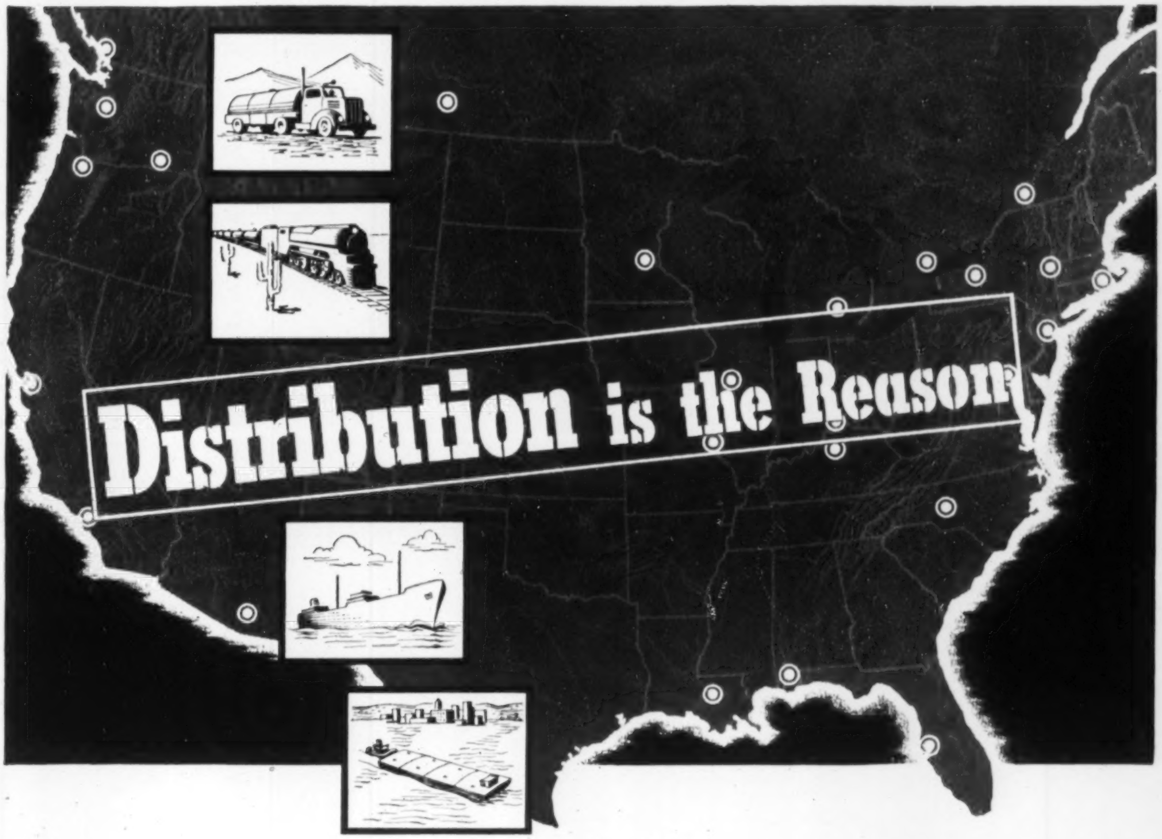
The lower 12 in. of the outer shell is constructed with a tapering inside diameter. A vertical gusset is cut into the side of the inner shell to permit it to contract as it is forced into this constricting portion of the outer shell. It is the contraction of the inner shell that supplies the grip on the core to be removed. An inverted wedge-shaped lip on the inside rim of the inner shell increases the gripping force applied.

When the extractor has been firmly set around the core, lifting effort is applied on the supporting cables. A few minutes of upward tension are required to crack the core loose in the Pierre shale. When the technique was used at Fort Randall Dam, The Niobara chalk there required two or three hours of tension before it broke free.

The device is called the K-T Core extractor after its developers—John Trantina, geologist of the CE's Omaha District and Anton Krejci, Jr., construction engineer. The unit was built at the CE job shop and boatyard in Omaha.

The K-T principle has been used successfully in lifters ranging down to 6 in. bore and a 10-in. lifter has been employed to remove 24 in. long concrete samples weighing 160 to 170 lb. The concrete cores were broken loose by wedging before removal.

BITUMULS® Gains in Nationwide Acceptance



FROM COAST-TO-COAST throughout this country, an ever-increasing number of Roadbuilders are specifying Bitumuls for all types of surfacing. These men specify Bitumuls for two good reasons:

1. They know that they can get Bitumuls *when and where they need it,* in the quantity and grade required.
2. They can depend on uniform high quality asphalt emulsions when they specify Bitumuls.

Back of this ready availability of Bitumuls is a system of distribution that is without parallel in the industry. From our many refineries and plants, Bitumuls moves in steady stream — by truck, rail, boat, or by barge — to local storage-points across the nation. Here it is held in readiness for immediate job-delivery or for pick-up by the Roadbuilder.

National distribution is, of course, only one of the reasons why more surfacing is being done with Bitumuls. Cold-applied emulsified asphalt in this modern, convenient form offers important savings in time, labor and equipment. New illustrated booklets, available on request, give full technical information and methods of application. Write for your copies today.

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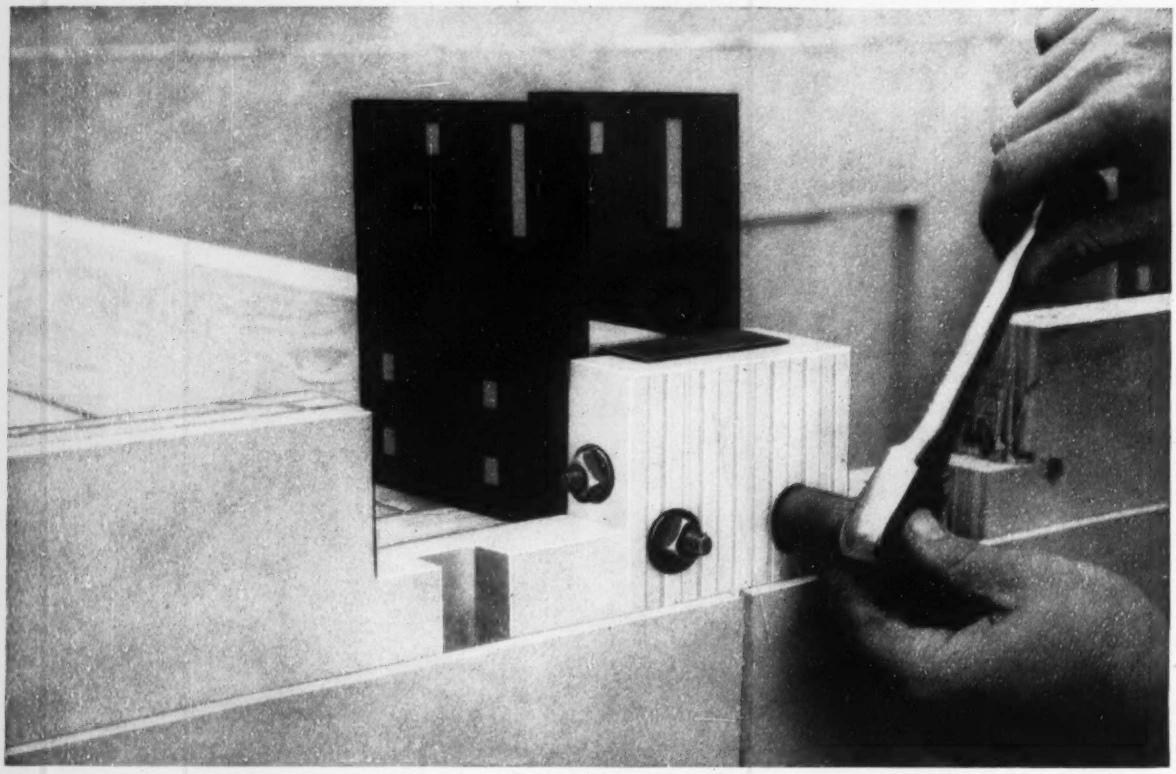
Washington 5, D. C. San Juan 23, P. R.



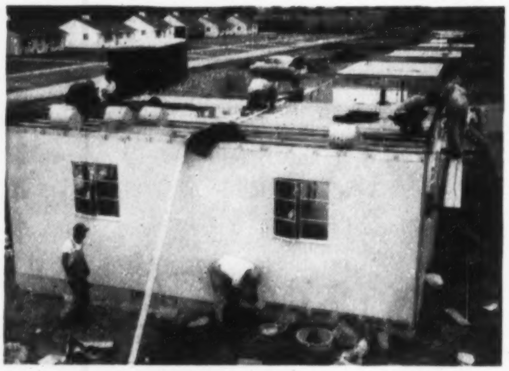
RAISING THE ROOF of a U.S. Steel home goes faster with help of RB&W bolts. Here workman is tightening bolt holding steel plate to exterior wall panel. Plate is then used as joint for bolting ceiling panels.

That's a house he's bolting together!

U.S. Steel Homes found that bolting together the panels of their fast-selling homes saves time and trouble. Nails are used only to hold panels temporarily in position for bolting and add no structural strength.

It's no accident, of course, that RB&W bolts and nuts were specified here. U.S. Steel Homes isn't the first to discover that the absolute uniformity and dependable holding power of RB&W products make them the best fasteners for any job. Workmen like the way RB&W nuts run on RB&W bolts fast and easy. And there's no question about the extra strength RB&W bolt-and-nut construction gives these homes.

Whenever you want to put something together *fast*, and make it stay fastened *for good*, give one of our men a ring. As a top-ranking maker of all kinds of fasteners, we're always able to recommend and supply the right ones for all your needs. You can count on fast delivery, too. RUSSELL, BURDSALL & WARD BOLT AND NUT COMPANY, Port Chester, N.Y.



HOUSE GOING UP. U.S. Steel home nears completion as workmen on scaffold (right) bolt on exterior panels. These sturdy homes offer quality construction at budget price.

3.8

RB&W

109 YEARS MAKING STRONG THE THINGS THAT MAKE AMERICA STRONG

Plants at: PORT CHESTER, N.Y.; CORAOPOLIS, PA.; ROCK FALLS, ILL.; LOS ANGELES, CALIF. *Additional sales offices at:* ARDMORE (PHILA.), PA.; PITTSBURGH; DETROIT; CHICAGO; DALLAS; SAN FRANCISCO. *Sales agents at:* PORTLAND, SEATTLE. *Distributors from coast to coast.*

BOOKS

Theory of elasticity

Applied Elasticity—by Chi-Teh Wang, 357 pp. McGraw-Hill Book Co., 330 W. 42nd St., New York 36, N. Y. $8.00.

Intended as a textbook for college seniors and postgraduate students, this volume offers several new approaches to and methods of presentation of the mathematical theory of elasticity. The author does not assume that the reader has a thorough background in advanced calculus and therefore whenever higher mathematics is involved, he derives the necessary equations.

The book not only presents the necessary theoretical equations for the mathematical formulation of problems but also analytical and numerical methods for solving them. Stress-strain relations and the general equations of elasticity are derived and applied to plane-stress and plane-strain problems, torsion, and bending and compression of bars. Methods of solution by finite-difference approximations, relaxation, energy principles and complex variables, and by variational methods are explained. Also included are chapters on elastic stability, bending and buckling of thin plates, and theory of thin shells and curved plates.

Miscellaneous notes

- **Fire resistance ratings** are the subject of a 48-page pamphlet published by the National Board of Fire Underwriters as a revision of Appendix A of its National Building Code. The booklet features a number of easy-reference tables on ratings of walls and partitions; beam, girder, column and truss protections; floor, ceiling and roof constructions. These tables—set up in terms of minimum needs for specified fire resistance—fit the requirements for hours fire resistance given in building codes. The pamphlet may be obtained free by writing the board at 85 John St., New York 38, N. Y. Copies also may be acquired from the board's other regional offices—in the Middle West, 222 West Adams St., Chicago 6, Illinois; west of the Rockies, 465 California St., San Francisco 4, Calif.

- **A guide** for architectural and engineering draftsmen in applying the principles of modular coordination to working drawings is provided in "Basic Principles of Modular Coordination," published by the Housing and

(*Continued on page 108*)

PIASECKI HOOKS ON TO

SAFETY WITH LAUGHLIN

From Thule to Tahiti versatile Piasecki helicopters are building a new tradition of usefulness and dependability. It's the kind of service where equipment has to be right—*all the time*. That's why Piasecki looked to Laughlin as the logical source for the swivel safety hooks used on the end of lifting and rescue cables in both rescue and workhorse helicopters.

These Duronze #3 safety hooks are non-sparking, have silicon bronze spring, bolt and latch, provide 90,000 lbs. ultimate tensile strength/sq. in. and are available from stock. Because the latch locks the load, it *can't* jolt off accidentally.

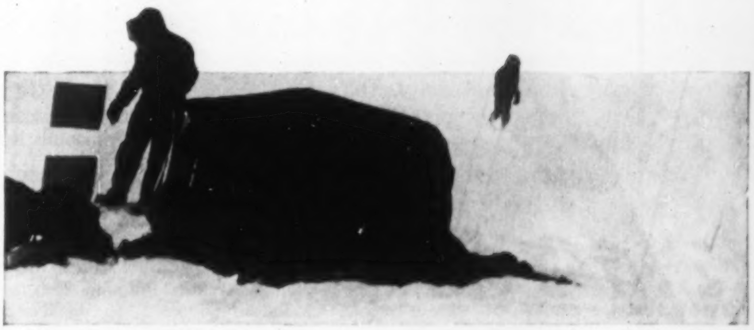
More and more safety- and economy-minded manufacturers are learning that Laughlin is their best source for quality drop forged fittings for wire rope and chain. Over 1500 types and sizes immediately available from stock make ordering easy.

Why not ask your supplier salesman to show you how Laughlin products can help in your business? Or write for new Catalog No. 155.

For Safety's Sake say

LAUGHLIN THE FULL LINE OF WIRE ROPE AND CHAIN FITTINGS

The Thomas Laughlin Company, 513 Fore St., Portland, Maine



Home Finance Agency. The HHFA division of housing research prepared the 29-page booklet to show how standardization of building materials on a uniform basis of measurement can save time, money and materials. Drawings illustrate practical application of the 4-in. module, showing coordinated assemblies of modular brick; brick with clay tile backup; concrete masonry; brick with concrete masonry unit backup; joining of dissimilar materials; modular framing, and various building products sized in 4-in. multiples. Copies of the publication may be obtained for 25¢ from the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.

New engineering books

Fresh Water From the Ocean, For Cities, Industry, and Irrigation—By Cecil B. Ellis and Members of the Staff of Nuclear Development Associates. 217 pp. The Ronald Press Co., 15 East 26th St., New York 10, N. Y. $5.00.

Relaxation Methods—By D. N. De G. Allen. 257 pp. McGraw-Hill Book Co., 330 West 42nd St., New York 36, N. Y. $7.50.

Collected Papers—By Stephen P. Timoshenko, 642 pp. McGraw-Hill Book Co., 330 West 42nd St., New York 36, N. Y. $15.00.

Differential Equations in Engineering Problems—By Salvadori and Schwarz. 432 pp. Prentice-Hall, Inc., 70 Fifth Ave., New York 11, N. Y. $8.65.

A Guide to Technical Writing—Second Edition. By W. George Crouch and Robert L. Zetler. 441 pp. The Ronald Press Co., 15 East 26th St., New York 10, N. Y. $5.00.

Engineering Contracts and Specifications—Third Edition. By Robert W. Abbett. 429 pp. John Wiley & Sons, 440 Fourth Ave., New York 16, N. Y. $6.00.

Tables of Offsets from Tangent to Parabolic Vertical Curves—By David S. Slatkin. 238 pp. Edward W. Sweetman, 1 Broadway, New York, N. Y. $5.00.

The Building Estimator's Reference Book—New Twelfth Edition. By Frank R. Walker. 1,774 pp. Frank R. Walker Co., 173 West Madison St., Chicago 2, Ill. $12.00 (This price includes a copy of the Vest Pocket Estimator.)

N.F.P.A. Handbook of Fire Protection—Eleventh Edition. Robert S. Moulton, editor. 1,560 pp. National Fire Protection Association, 60 Batterymarch St., Boston 10, Mass. $10.50.

Mechanics of Materials—Third Edition. By Philip Gustave Laurson, and William Junkin Cox. 414 pp. John Wiley & Sons, New York, 440 Fourth Ave. $5.75.

Flow and Fan: Principles of Moving Air Through Ducts—By C. Harold Berry. 226 pp. The Industrial Press, 148 Lafayette St., New York 13, N. Y. $4.00.

Reports and pamphlets

Third Technical Progress Report of The Ship Structure Committee—Obtainable from the Secretary, Ship Structure Committee U. S. Coast Guard Headquarters, Washington 25, D. C.

Welded Wire Fabric Reinforcement for Asphaltic Concrete Resurfacing over Concrete Pavement Slabs—Wire Reinforcement Institute National Press Building, Washington 4, D. C. Limited free distribution.

Welded Wire Fabric Reinforcement in Bituminous Resurfacing—Technical Bulletin No. 204, American Road Builders' Association, World Center Building, Washington 6, D. C. $0.50.

Bibliography on Tidal Hydraulics—Report No. 2, Committee on Tidal Hydraulics. Obtainable from the committee, Box 8629, Philadelphia 1, Pa. $1.00.

Circular Plates Subjected to Radially Symmetrical Transverse Load Combined with Uniform Compression or Tension in the Plane of the Plate—Obtainable from Teknisk Tidskrift, Box 841, Stockholm 1, Sweden. Price Sw.Kr. 7.00.

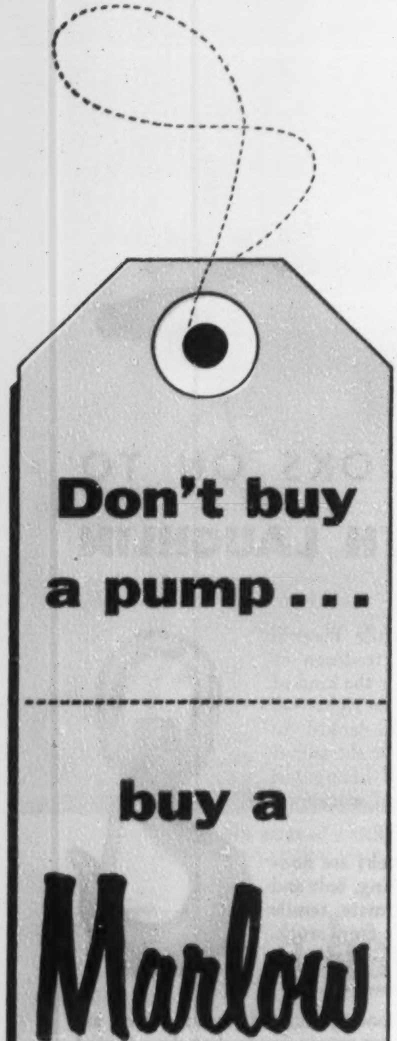
Alloy Steels Pays Off—Climax Molybdenum Co., New York 36, N. Y. Limited free distribution.

Parking As a Factor in Business—Special Report No. 11, Highway Research Board, 2101 Constitution Ave., Washington 25, D. C. $6.00.

Automobile Parking in the United States—Bibliography 14, Highway Research Board, 2101 Constitution Ave., Washington 25, D. C. $1.35.

Calcium Chloride in Concrete—Manual CM-1 Calcium Chloride Institute 909 Ring Building, Washington 6, D. C. Limited free distribution.

Landscape Design and Its Relation to the Modern Highway—Six Lectures Delivered at the College of Engineering, Rutgers University. Engineering Bulletin G-3, College of Engineering, Rutgers University, New Brunswick, N. J. $1.50.



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Yes! One of these experienced engineers is on the job in your locality to help your Marlow dealer solve your pumping problems. They make certain that Marlow dealers know which pumps are properly suited to your requirements. These Marlow men, strategically placed throughout the country, guarantee that your Marlow equipment will give the kind of trouble-free service you expect from the best. For information on the complete Marlow line—see your Marlow dealer today.

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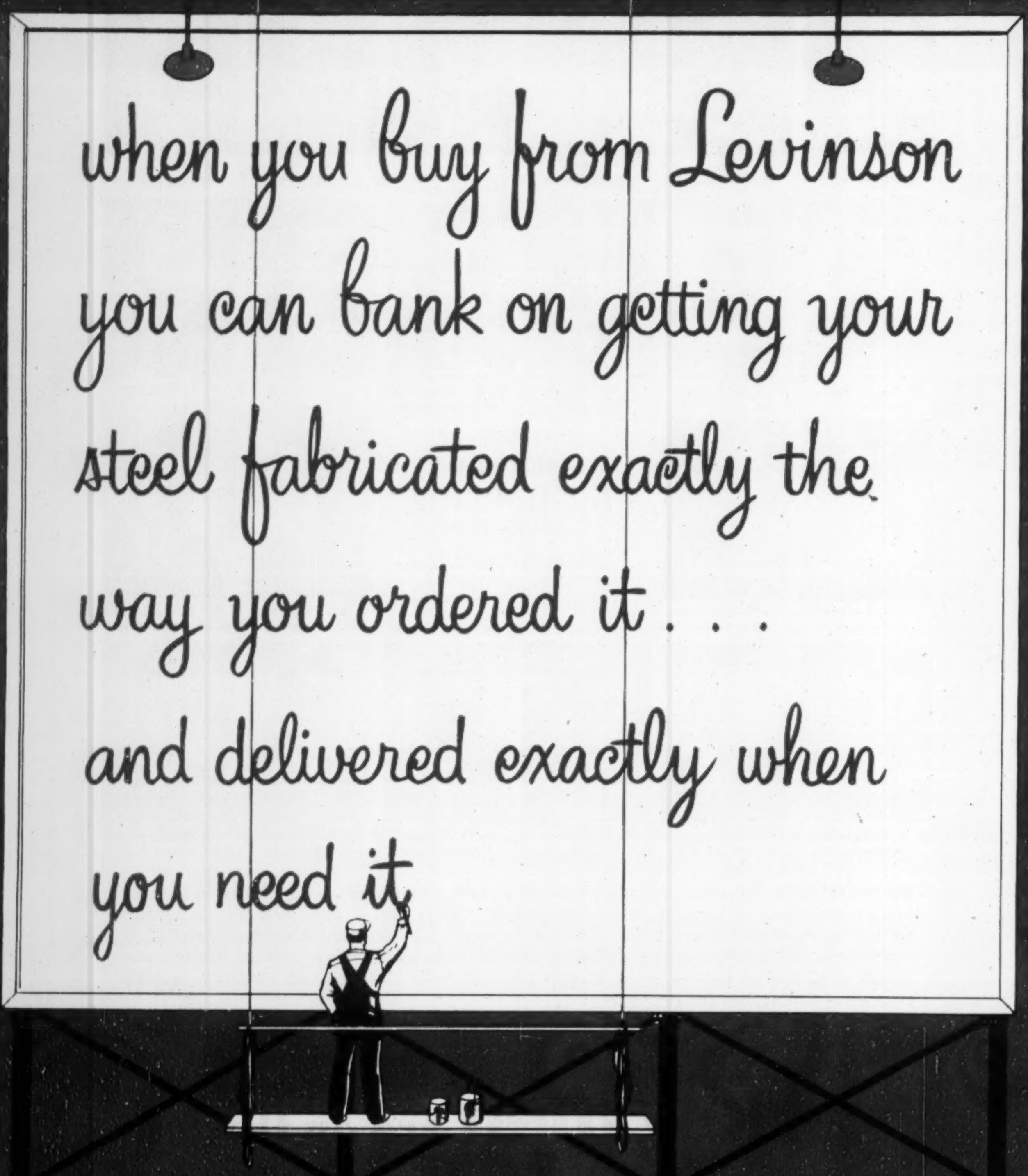

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DISTRIBUTORS AND FABRICATORS FOR THE STEEL INDUSTRY

LEGAL

Warranty as to quality

At the time that a contract for the purchase of a new building was entered into, a separate agreement was signed whereby the seller agreed that at the time the buyer paid the purchase price and title passed to the buyer, that the seller would deliver a written agreement that the cellar of the house would be water tight. The buyer paid the purchase price and took title to the building but the seller refused to deliver the agreement warranting that the cellar was water tight. The cellar was not water tight and the buyer brought the action to recover the cost of remedying the defective condition of the cellar and was allowed a recovery.[1]

The seller contended that there was no consideration to support the second agreement. The court in its opinion pointed out many cases that sustained the proposition of law that where several writings are made as part of one transaction and refer to the same subject matter, they may be read together as one instrument, and the recitals in one may be explained, amplified or limited by reference to the other.

(1) Lawrence v. Tandy & Allen, Inc., 100 A. 2d 891, Supreme Court of New Jersey, Nov. 30, 1953.

Construction of contracts

The law is well settled that a written contract containing the entire agreement of the parties supersedes all prior and contemporaneous negotiations. However, where a written contract is uncertain or ambiguous, oral testimony is admissible to show what the parties meant by the uncertain or ambiguous words or phrases used in the written contract.

Before oral evidence is admissible, the trial court must determine, as a question of law that the written contract is ambiguous or uncertain.

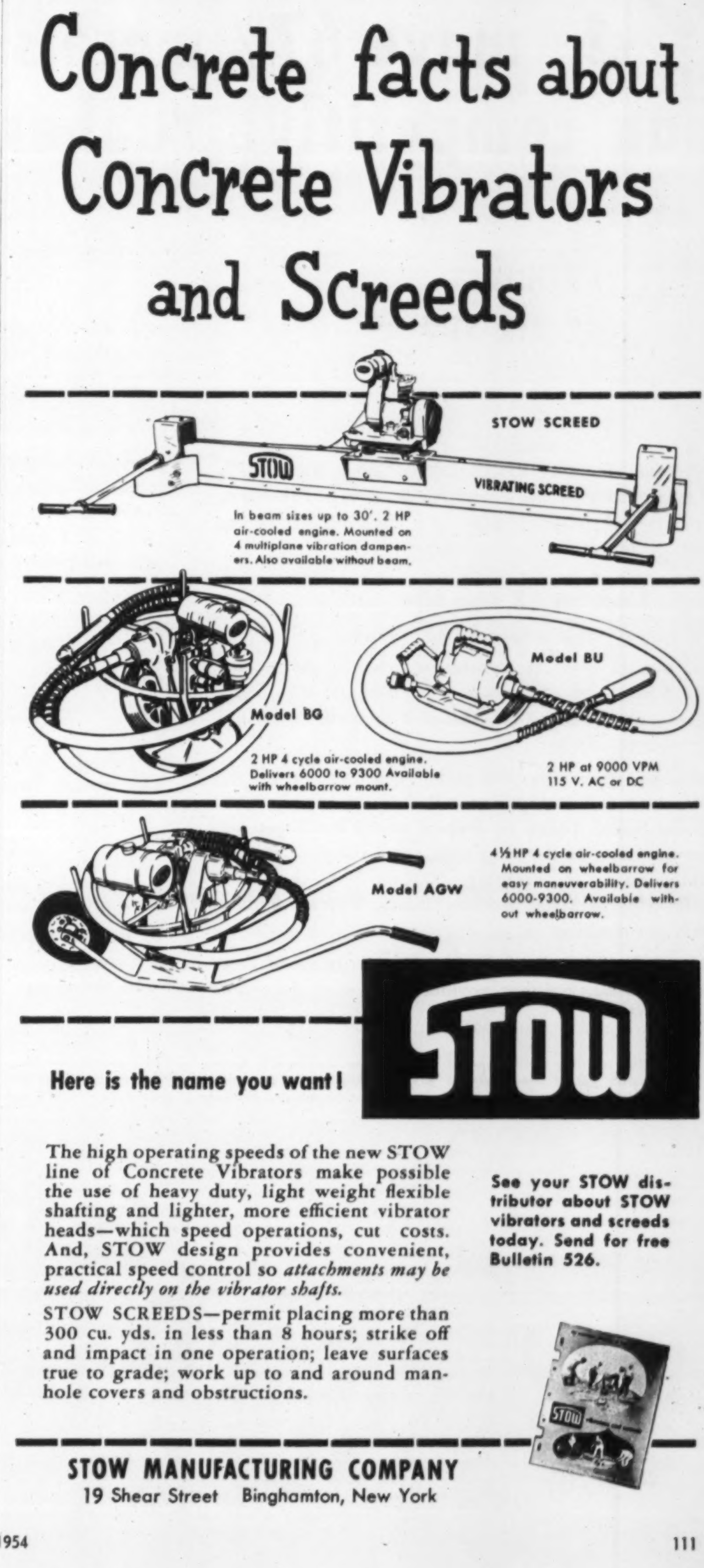
The construction given to a contract by the acts and conduct of the parties with knowledge of its terms before any controversy has arisen as to its meaning is entitled to great weight and will, when reasonable, be adopted and enforced by the courts.[1]

(1) Schmidt v. Macco Const. Co., 260 P. 2d 230, Court of Appeal of Cal., August 17, 1953.

Some changes must be written

Where a contract provided that no amendments, modifications or addi-

(*Continued on page 114*)



Concrete facts about Concrete Vibrators and Screeds

STOW SCREED

VIBRATING SCREED

In beam sizes up to 30'. 2 HP air-cooled engine. Mounted on 4 multiplane vibration dampeners. Also available without beam.

Model BG

2 HP 4 cycle air-cooled engine. Delivers 6000 to 9300 Available with wheelbarrow mount.

Model BU

2 HP at 9000 VPM
115 V. AC or DC

Model AGW

4½ HP 4 cycle air-cooled engine. Mounted on wheelbarrow for easy maneuverability. Delivers 6000-9300. Available without wheelbarrow.

Here is the name you want! STOW

The high operating speeds of the new STOW line of Concrete Vibrators make possible the use of heavy duty, light weight flexible shafting and lighter, more efficient vibrator heads—which speed operations, cut costs. And, STOW design provides convenient, practical speed control so *attachments may be used directly on the vibrator shafts.*

STOW SCREEDS—permit placing more than 300 cu. yds. in less than 8 hours; strike off and impact in one operation; leave surfaces true to grade; work up to and around manhole covers and obstructions.

See your STOW distributor about STOW vibrators and screeds today. Send for free Bulletin 526.

STOW MANUFACTURING COMPANY
19 Shear Street Binghamton, New York

"C's" move 67% more station yards than competitive rubber-tired units

AT LAKEHURST NAVAL AIR STATION

Reid Contracting Company, Inc., Woodbridge, New Jersey, building a 1,500,000-yd. runway and LTA mat enlargement at the Naval Air Station in Lakehurst, New Jersey, kept production at a high pace by using 5 electric-control C Tournapulls.

Average 1.8 more loads hourly over 2000′ longer cycles

On 6 months of work, contractors' records showed the 5 "C's" produced 19% more *pay* yards and 67% more *station* yards per unit than each of 7 competitive 2-wheel prime-mover scrapers.

During one typical 2-month period, over cycles averaging 7000′, the 5 C Tournapulls totalled 10,226 trips in 1,160 working hours. That's an average of 8.8 loads per machine per hour. In the same time, the 7 competitive units working on cycles averaging 5000′, or *2000′ less,* made 10,948 trips in 1,560 working hours. That's 7.0 loads hourly per machine.

Not only did each of the Tournapulls bring in more *loads* per hour, but they accounted for more *pay yards* despite 9% smaller (16 vs. 17½ yds.) rated heaped capacity. Government cross-section tests showed an average of 10½ pay yards of clayey sand per load for the Tournapulls and 11½ pay yards for competition. Multiplied by trips, we find each "C" moved 92½ pay yards hourly on longer hauls to 80½ for competitive units. On a station-yard basis, the "C's" outhauled the other rigs, 3237 to 2012 yds. hourly.

Some of this production difference is due to the greater speed and easier loading of the Tournapulls . . . part to less cable breakage and PCU trouble. Maintenance costs on the C Tournapulls were only ⅓ to ¼ those on the other self-propelled scrapers. In addition, the Tournapulls worked in places where the others couldn't.

"Best where going is roughest"

Superintendent Ray E. Saunders reports, "We found that our C Roadsters gave superior performance where the going was roughest. These machines are really hard to stick. We always used them for the first fill over cleared, rough and swampy land."

Check other job figures

Ask your LeTourneau-Westinghouse Distributor to back up this report with figures from other jobs. He'll be glad to show you performance reports from owners all over the country . . . on long or short cycles. He has facts on jobs like yours . . . call him or write today!

With average haul speed of 12 mph, Tournapulls over a two-month period made almost 2 more trips hourly over 40% greater distance than other two-wheel prime-movers. Working 7000′ cycles, each of 5 Tournapulls averaged 812 pay yards per 9-hr. day for 2 months. During one 45-hour week, the 5 "C's" moved 20,976 pay yards . . . 839 yds. per day per machine.

Electric-control "C's" spread 10½ pay yards of sand over 100 ft. in 15 seconds. Completing a round trip in about six minutes, each unit hauled 92½ pay yards every 50-minute hour.

Production comparison of C Tournapull with other "Tournapull-type" scraper

Figures given below show averages per machine for 5 C Tournapulls and averages per machine for 7 competitive units over 2-month period. All information taken from contractor's records. All scrapers push-loaded by 148 and 175 hp crawlers in clayey sand.

Units	Average Cycle Distance	Total Working Hours	Total Loads per machine	Pay Yards per load*	Total Pay Yards per machine	Station Yards** per machine
C Tournapull (16 yards heaped capacity)	7000′ 40% longer	232 4% more	2045.2 30% more	10.5 9% less	21,475 19.4% more	751,625 67.1% more
Competitive rubber-tired scraper (17½ yards heaped capacity)	5000′	223	1564.0	11.5	17,986	449,650

*by government cross-section

**a station yard is a yard of dirt moved 100 feet

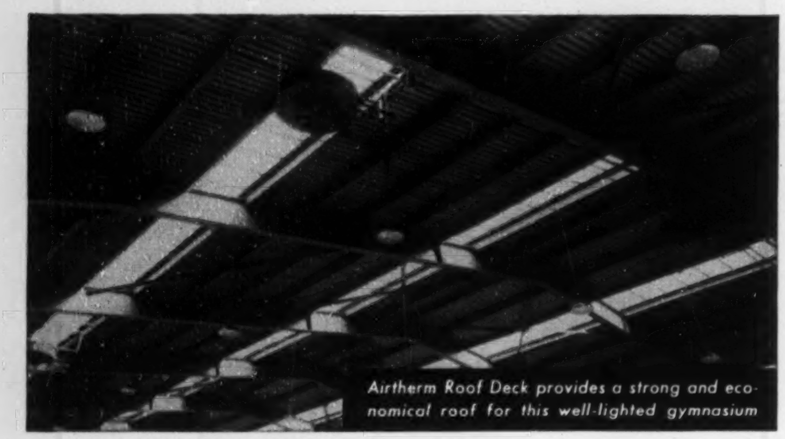
Tournapull—Trademark Reg. U.S. Pat. Off. P-419-A

LeTourneau-Westinghouse Company

PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

WIDER
Airtherm ROOF DECK



Airtherm Roof Deck provides a strong and economical roof for this well-lighted gymnasium

designed for a wide range of applications

Wider, but so light one man can handle it, Airtherm Roof Deck speeds construction time . . . cuts construction costs

Airtherm Steel Deck Sheets are furnished in 30″ widths (the widest in the industry) with five ribs spaced on 6″ centers. These ribs, 1⅝″ deep, have a bearing surface of ⅝″ and a top opening of only ¾″ wide. These wider, self-aligning sheets mean fewer longitudinal laps with resultant savings in construction time and costs.

Airtherm Decking provides a strong, safe and durable steel roof in flat, pitched or arched construction. It has been proved in installations as side walls, partitions, canopies, and as a sub-base for concrete or aggregate flooring. This versatility, plus its attractive appearance, has led to many unique applications in a wide range of structures.

18-GAUGE AIRTHERM ROOF DECK	PROPERTIES
Section Modulus (in.) 3	.220
Moment of Inertia (in.) 4	.263
Resisting Moment (in lbs.)	3960

To care for all contingencies relative to geographical areas and various purlin spacing, Airtherm Decking is also manufactured in No. 22 Gauge and No. 20 Gauge metal thicknesses.

FABRICATED PRODUCTS DIVISION
Airtherm MANUFACTURING COMPANY
785 South Spring Avenue
St. Louis 10, Missouri

SEE OUR CATALOG IN SWEET'S

For more complete information consult our catalog in Sweet's 2dAi, or write . . .

Member: Metal Roof Deck Technical Institute

tions should be valid unless the same were in writing and signed by both parties to the contract, and no modifications of the contract were made in writing, oral testimony can not be admitted to show what the parties intended at the time of the making of the contract.[1]

[1] Eutectic Welding & Alloys Corp. v. Rauch, 115 N.E. 2d 898.

Certificate of completion

"The rule with reference to obtaining the certificate of an architect, engineer, or other third person, when required by the contract, does not apply if it is made to appear that the owner or contractee without sufficient justification therefor causes the certificate to be withheld. In such a case the contractor is excused from the necessity of obtaining the certificate. If the architect is satisfied that there has been a substantial performance of the contract, it then becomes his duty to issue the certificate of completion; and if he does not do so, his conduct is regarded as arbitrary and capricious. If the architect is in collusion with his principal, or yields to his opposition to the issuance of the certificate when such opposition is not justified, then in such cases the contractor has a legal excuse for not obtaining the certificate as a condition precedent to recovering on his contract."[1]

[1] Haugen et al. v. Raupach et al., 260 P. 2d 340, Supreme Court of Wash., August 31, 1953.

Rights of subcontractor

A subcontract provided that the work was to be performed by the subcontractor at such time or times and in such manner and in such quantities as might be required by the general contractor to meet its time schedule. The subcontractor brought an action against the general contractor to recover damages sustained by reason of delays but was denied a recovery.[1]

The action was predicated on a claim that the general contractor had failed to comply with provisions of the contract and specifications of the general contract which required the work to be completed with the utmost speed. The court held that these provisions of the general contract had no application to the subcontractor who was not a party to the contract that contained the provisions in question.

The court pointed out that while the subcontract referred to the plans and specifications of the general contract, this reference was made only for the purpose of defining the work to be

(*Continued on page* 119)

MACWHYTE WIRE ROPE

You buy right when you buy...

MACWHYTE WIRE ROPE PRODUCTS

Whatever your wire rope needs, you'll find that the best for your equipment is made by Macwhyte. A thousand and one types and sizes of wire rope are available in carbon steel, stainless steel, or monel metal. Also there are braided slings, assemblies, aircraft control cables, terminals, and tie rods.

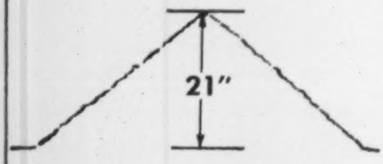
There is a Macwhyte product for every handling job. The right specifications mean top operating efficiency. Get the most service from your wire rope products by consulting our engineers who will gladly make recommendations that can save you time and money. Catalogs are available.

MACWHYTE COMPANY
2930 Fourteenth Avenue
Kenosha, Wisconsin

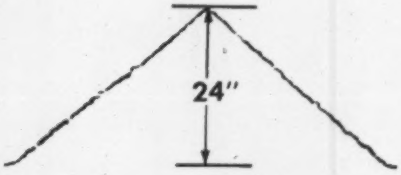
Manufacturers of Internally Lubricated PREformed Wire Rope, Braided Wire Rope Slings, Aircraft Cables and Assemblies, Monel Metal, Stainless Steel Wire Rope and Wire Rope Assemblies. Mill depots: New York • Pittsburgh • Chicago St. Paul • Fort Worth • Portland Seattle • San Francisco • Los Angeles Distributors throughout the U.S.A. 1067

QUESTION *

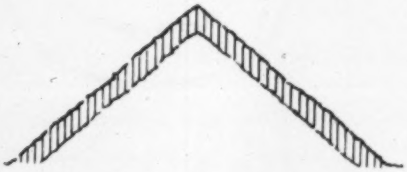
How much more material is there in a Three-Inch-Higher Windrow . . . 9% . . . 18% . . . 31% . . . ?



Cross section of an average, 21-inch high windrow . . . the area (width x height ÷ 2) is 614 sq in.



Now increase the height of the windrow by 3 in. The cross-section area now equals 804 sq in.

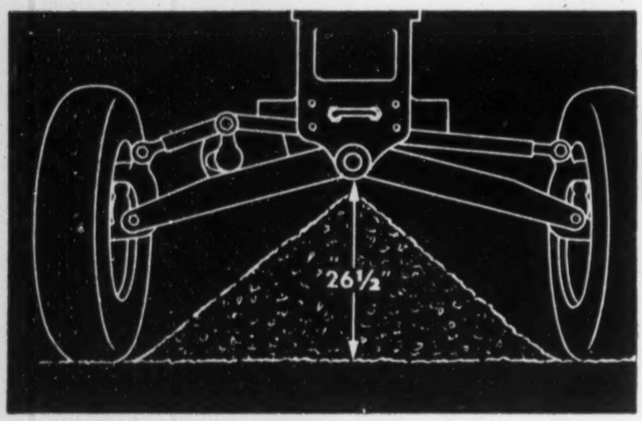


The difference . . . 190 sq in, over 30 percent more area, which means over 30 *percent more yardage.*

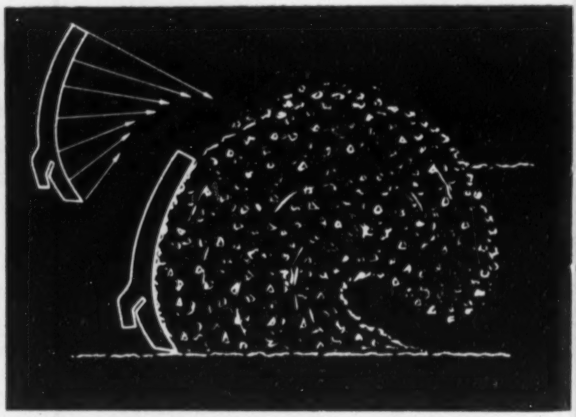
*Only a Combination of Advanced Design Features Lets a Motor Grader Handle Big Loads Fast

To take full advantage of even a *three-inch* difference in windrow height (as explained above) a heavy-duty motor grader needs new design and performance characteristics from front to rear . . . and from the top of the main frame to the bottom of the blade. No single feature can give you the increased work capacity that is so essential on road construction, maintenance and oil-mix jobs.

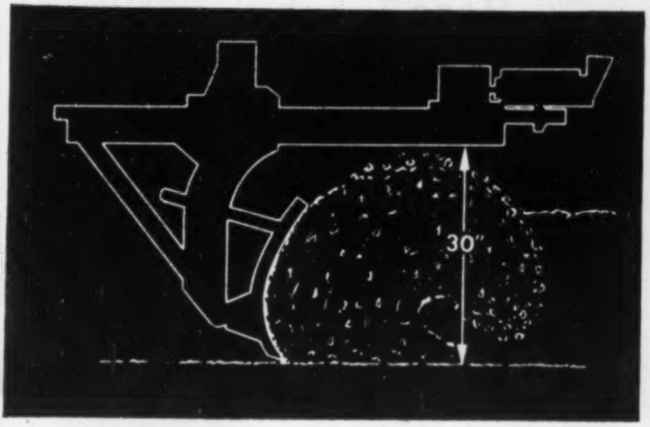
Now let's analyze the Allis-Chalmers 104-brake-horsepower AD-40 to see how it measures up to these stiff requirements.



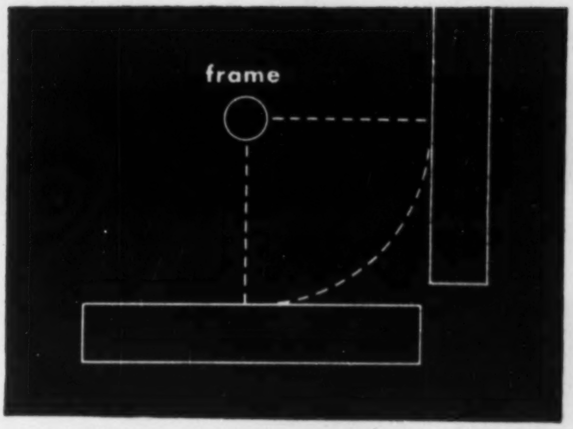
1 **A high-arch front axle** to straddle big windrows . . . take advantage of that 3-inch difference and let big loads pass through to the blade.



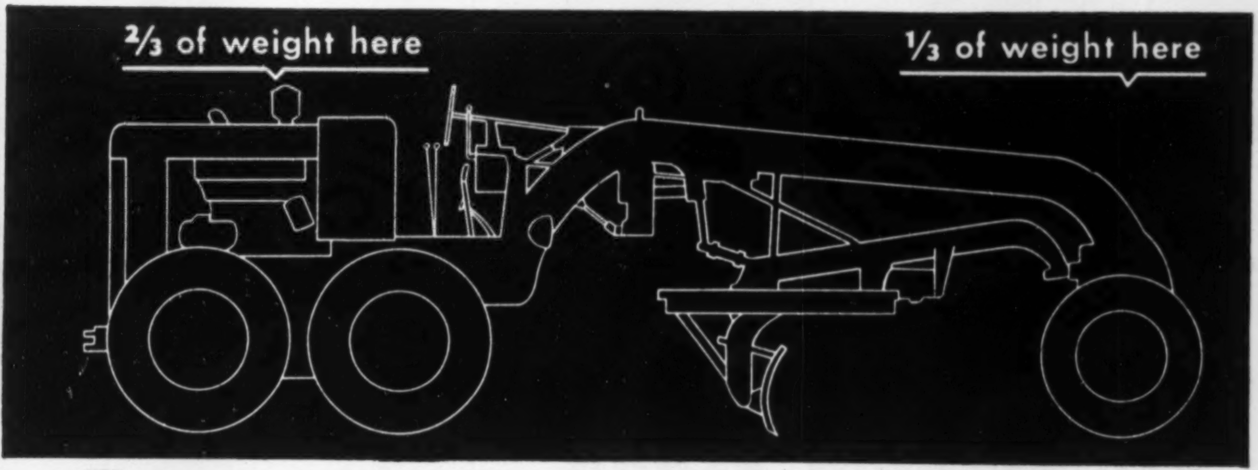
2 **A rolling-action moldboard** . . . to insure a "live" load that rolls freely off the blade . . . moves the load faster and takes full advantage of engine power.



3 **Ample throat clearance** . . . to handle 30 percent bigger loads without disturbing free, rolling action . . . and without jamming dirt, oil-mix or any other material against the circle.

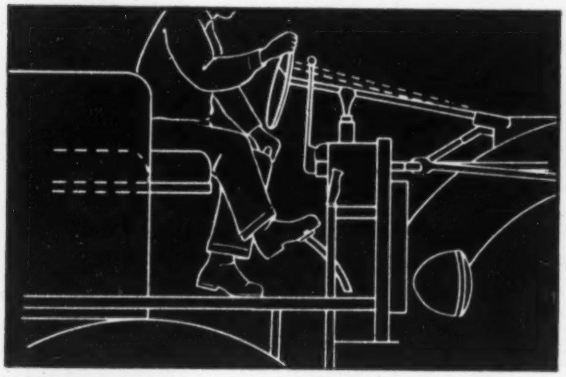


4 **Full blade freedom** . . . the exclusive tubular frame and a long tubular drawbar insure full blading effectiveness on the road, in the ditch or on the slope.



5 **Blading accuracy** is essential. A long wheel base, the tubular frame . . . and lift-cases located directly over the circle, provide smooth, accurate finishing.

6 **Balanced power, weight and traction** . . . a heavy-duty engine and *two-thirds* of the weight concentrated on tandem-drive rear wheels provide the best in traction, positive blade pressure and steer-ability.

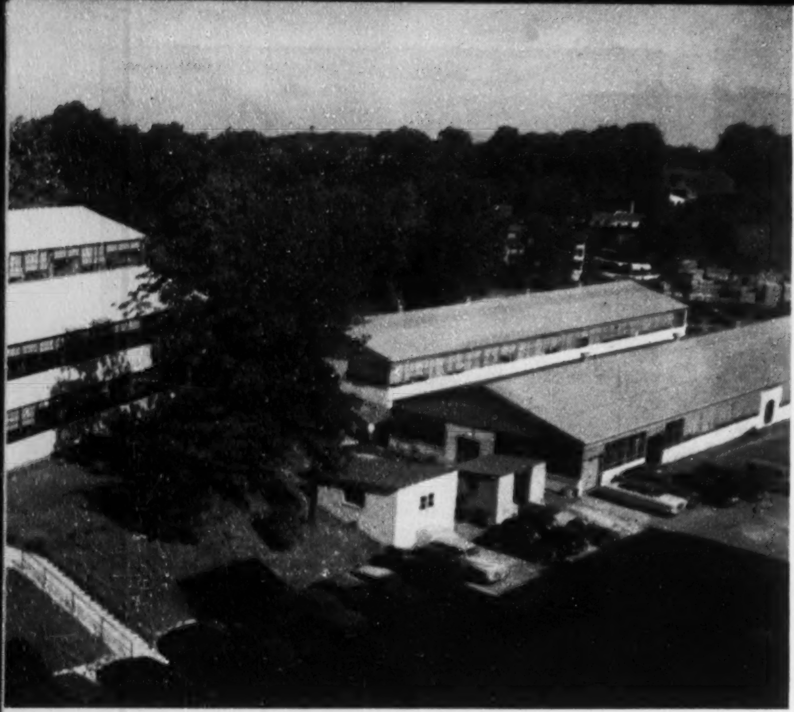


7 **Easy control and visibility** — A big platform with plenty of leg room . . . adjustable seat and steering wheel . . . power steering will assure working ease. Single member frame, low control board and tapered platform corners provide "pilot-house" visibility.

This design, that combines working advantages every owner needs and wants, exists in only one motor grader . . . the Allis-Chalmers AD-40. *That's a fact* . . . a fact your Allis-Chalmers dealer will be glad to prove to you. Ask him to show you how the AD-40 gives you the *differences* that mean more work done . . . by a demonstration under on-the-job conditions.

ALLIS-CHALMERS
TRACTOR DIVISION • MILWAUKEE 1, U. S. A.

AD-40 Motor Grader
104 brake hp • Weight — 23,000 lb



Attractive-looking plant site at Remington Rand Advanced Research Laboratory owes much of its good looks to two aluminum-sheeted Butler buildings.

BUTLER buildings cut months off building time for *Remington Rand*

"We needed a building in a hurry when we signed the contract for the first of our two 50′ x 200′ aluminum-sheeted Butler buildings in 1948," reports Mr. S. E. Szemetko, plant engineer at Remington Rand's Laboratory for Advanced Research, Norwalk, Conn. "It was ready for use only 10 weeks later—which proved the value of Butler's fast delivery and quick erection.

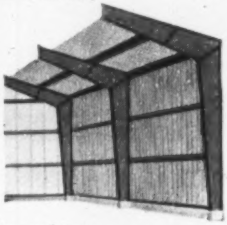
"Butler buildings also proved adaptable. When we built our 4-story office building in 1952, we economically combined Butler buildings with masonry construction. This provided the space we required, on a limited lot. We used a 40′ x 300′ Butler building for the entire fourth floor, and two 20′ x 300′ Butler sections on the sides of the third floor, totaling 24,000 square feet of well lighted, well insulated, functional office space."

Before you build—see your Butler dealer. He'll show you why corporations like Remington Rand, Deepfreeze, Coleman Company, Norwich Pharmacal, Santa Fe and Westinghouse use Butler buildings. He'll show you the pre-engineered, quality features that bring you superior, permanent construction, with clear-span interiors, rigid frame strength for suspending conveyors and monorails, better fire-safety. He'll show you real construction economy—in lower first cost, lower erection costs, lower maintenance. Write office nearest you for his name and more information by mail.

Here is why BUTLER *is a better buy*

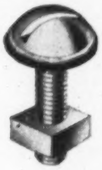
Every Foot of Floor Space is Usable

There are no interior posts or columns to waste space and create work-slowing "bottlenecks." Rigid-frame construction also shrinks maintenance costs . . . extends building life.



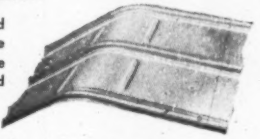
Fast Erection . . . Easy Expansion

Precision-punched and dimensioned bolt holes speed erection—simplify expansion or dismantling and moving. Galvanized bolts, with Neoprene rubber washers, lock deep-corrugated sheets firmly to the sturdy frame.



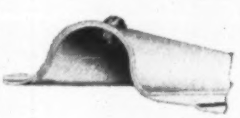
Weatherproof Protection

The one-piece, die-formed roof ridge eliminates ridge roll—helps to make the building leakproof and weather-tight.



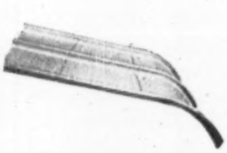
Triple-Strength Corrugated Sheets

Butler sheeting with deep-formed corrugations on 12-inch centers, is three times as strong as ordinary corrugated sheets. Overlapping corrugations bolt tightly together for maximum strength and weather protection. Your choice of steel or aluminum sheeting.



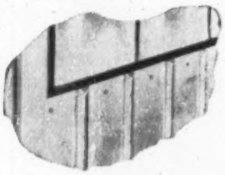
Attractive Curved Eaves

The neat, die-formed eaves—which bolt to the roof sheets—add to the appearance of Butler steel buildings . . . increase the strength of the eaves . . . help insure weather-tightness.



Weather-sealed Windows and Base

Where corrugated sheets meet windows or the foundation, they are tightly crimped, for a snug fit that keeps out snow, moisture and rodents.



BUTLER STEEL PRODUCTS

BUTLER MANUFACTURING COMPANY

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done, also that the provision of the subcontract setting forth the progress as to how the work was to proceed prevailed.

(1) Arrow Sheet Metal Works v. Bryant & Detwiler, 61 N.W. 2d 125, Supreme Court of Michigan, Nov. 27, 1953.

Right to change limited

A contract with the government for the erection of towers and the installation of a transmission line gave the government the right to make changes in the work and provided for an equitable adjustment in such event. The court held that such provision of the contract did not authorize the elimination of a substantial part of the work.[1]

The court in its opinion stated: "Under the cases, if the contract imposes a duty on the government to complete the construction of the structure involved in the contract, a 'changes' clause does not authorize the deletion of an integral part of the work. General Contracting, etc., Co. v. U. S., 84 Ct. Cl. 570; Stapleton Construction Co. v. U. S., 92 Ct. Cl. 551; Silberblatt & Lasker, Inc. v. United States, 101 Ct. Cl. 54; Del Balso Const. Corporation v. City of New York, 278 N. Y. 154, 15 N. E. 2d 559; Litchfield Const. Co. v. City of New York, 244 N. Y. 251, 155 N. E. 116; see first opinion in Blair v. United States, 8 Cir. 147 F. 2d 840; Peter Kiewit Sons' Co. v. United States, 74 F. Supp. 165, 109 Ct. Cl. 517; Continental Illinois Nat. Bank & T. Co. v. United States, 101 F. Supp. 755, 121 Ct. Cl. 203. These cases established the law to be that under a changes clause the government has no power to change the essential nature or main purpose of the contract, but may only make changes incidental to the primary object of the contract. The change order under such clauses may not essentially alter the project contemplated by the contract.

"This construction of such clauses is not only in accordance with their obvious purpose, but is also strongly supported by public policy. If the government were empowered by such clauses to alter materially the object of the contract, after construction had started, all bidders would have to take such possibility into consideration and materially raise their bids in anticipation of such losses, thus increasing the cost of public works."

(1) Boomer v. Abbett, 263 P. 2d 476, Court of Appeal of Calif., Nov. 24, 1953

(These summaries of court decisions are prepared by J. Vernon Werbin, New York attorney and civil engineer.)

Profitable performance

starts with
LE ROI
heavy-duty
power

A LE ROI is a power-packed, valve-in-head engine designed especially for heavy-duty service

Le Roi engines power oilfield, construction, industrial, and farm machinery. Here's a typical construction-field application — powering a Barber-Greene Mixing Plant.

THERE are good reasons for Le Roi leadership in the heavy-duty engine field — five good reasons:

1. **Le Roi engines** are built by a manufacturer with many years of experience in meeting the specialized power requirements of heavy-duty service.

2. **Le Roi engines** are the most powerful engines in the medium-speed, heavy-duty class; yet are compact, and call for relatively low investment.

3. **Le Roi engines** have the weight and stamina to withstand the punishment handed out to field equipment, without costly breakdown.

4. **Le Roi engines** are precision-machined for smooth operation, long life.

5. **Le Roi engines** have plenty of power in reserve to handle the heavy load.

Le Roi is your best power buy — whether you're getting new equipment or replacement engines, or whether you're looking for an efficient power plant for the equipment you've designed. Le Roi has a full range of sizes from 15 to 635 hp — for gasoline, natural gas, butane.

E-30

Write for bulletin

LE ROI

LE ROI COMPANY
A Subsidiary of Westinghouse Air Brake Co.
MILWAUKEE 14, WISCONSIN

Plants: Milwaukee • Cleveland — Greenwich — Dunkirk, Ohio • Coldwater, Michigan

Would You Like To INCREASE Scraper Rope Service?

Others Have!...by switching to:

Tuffy® SCRAPER ROPE

Wheel Scrapers Need a wire rope that is flexible enough to withstand sharp bends over small drums and hug sheave grooves . . . stiff enough to resist looping and kinking when slack, TUFFY SCRAPER users report greatly increased service after switching to Tuffy.

Tuffy Is Specially Constructed for the purpose of absorbing the many and varied stresses imposed by wheeled scrapers! Strands are pre-shaped to give *Longer Life*—the strength of every strand is concentrated on carrying the rope load, thus a balanced construction. This special design allows TUFFY SCRAPER ROPE to resist drum crushing abuse and the strains caused by angle pulls through swivel-mounted sheaves.

No Complicated Specifications are needed when you order. Just state the length, diameter and "TUFFY SCRAPER ROPE". See for yourself how TUFFY SCRAPER ROPE can pay off for *you!*

Tuffy Slings

9-part machine-braided wire fabric. Will not materially damage fabric when kinked or knotted! Favorite with those that demand safety and lower costs!

Tuffy Hoist Line

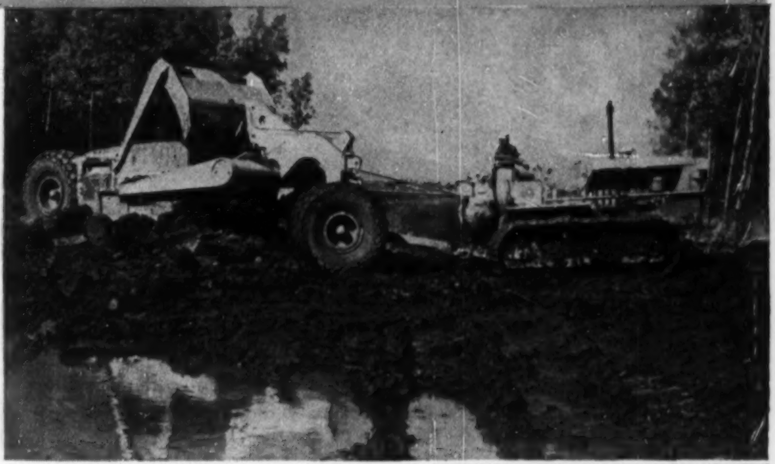
Designed to give you the utmost in service, Tuffy Hoist Line is tailor-made for use on OVERHEAD, STIFF LEG and MOBILE CRANES, CLAMSHELLS and DERRICKS.

Tuffy Dragline

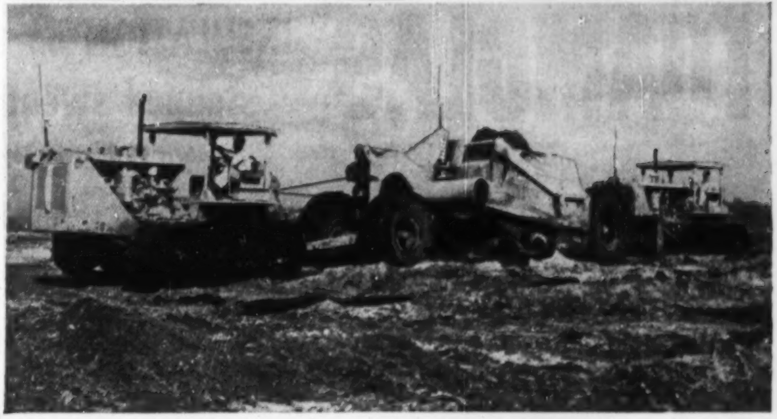
Designed to give maximum abrasive resistance and flexibility! Rides better on grooves, hugs drum when casting!

Scraper work, such as building this farm-to-market road, puts much strain on rope . . . causes stresses that ordinary wire rope just can't take for long. TUFFY SCRAPER ROPE is specially pre-shaped to apply the *full strength of every strand* to the rope load!

Highway construction jobs often run into tough spots like this water-filled pot hole. Moving the heavy, gummy clay to fill it for a good road bed imposes a terrific strain on scraper rope. On jobs like this the flexibility and super strength of TUFFY SCRAPER ROPE really pays off.



The power of a crawler in front and back of a scraper is needed in some cases to hack out the dirt when preparing runways for jet planes. TUFFY SCRAPER ROPE plays a most important part. Its long life does away with expensive downtime caused by rope failure. The construction of TUFFY SCRAPER ROPE is so designed to give you long and economical service!



Tuffy Dozer Rope

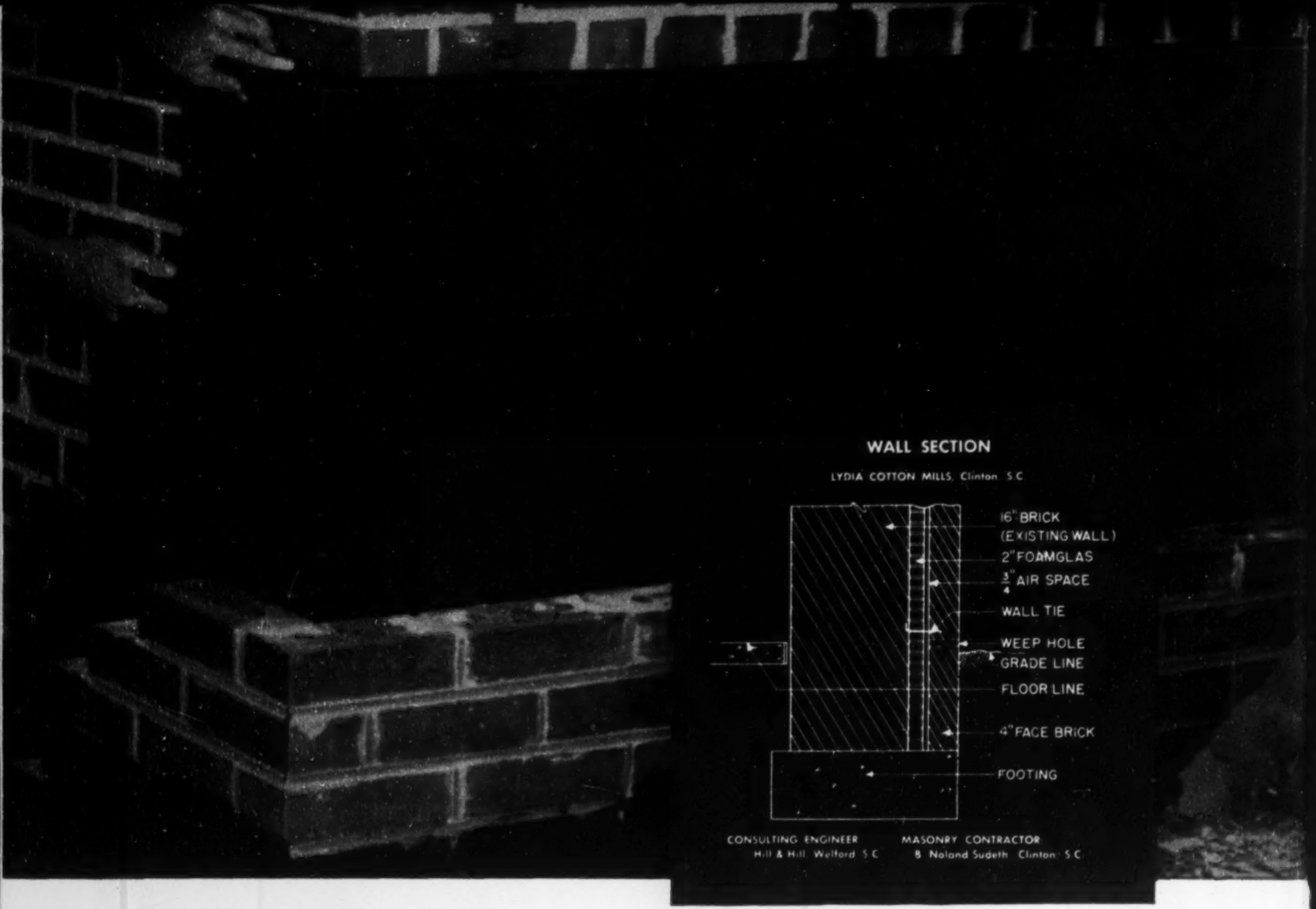
Combined with proper cut-off procedure, TUFFY DOZER will greatly increase your service life . . . cuts downtime. Available in 150' lengths ½" and 9/16" diameter.

UNION WIRE ROPE CORP

union Wire Rope corporation

2228 Manchester Ave. Kansas City 26, Mo.

Specialists in High Carbon Wire, Wire Rope and Braided Wire Fabric


WALL SECTION
LYDIA COTTON MILLS, Clinton, S.C.
16" BRICK (EXISTING WALL)
2" FOAMGLAS
$\frac{3}{4}$" AIR SPACE
WALL TIE
WEEP HOLE
GRADE LINE
FLOOR LINE
4" FACE BRICK
FOOTING
CONSULTING ENGINEER
Hill & Hill, Welford, S.C.
MASONRY CONTRACTOR
B. Noland Sudeth, Clinton, S.C.

"FOAMGLAS® INSULATION on the outside stopped sweating on the inside,"

reports P. Silas Bailey, President, Lydia Cotton Mills

P. SILAS BAILEY
President and Treasurer
Lydia Cotton Mills
Clinton, S.C.

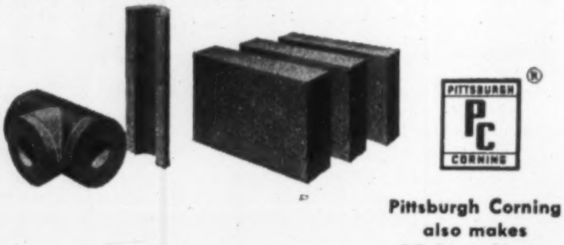
"Wet weave room walls were obvious evidence that even 16-inch masonry walls weren't insulation enough to enable us to maintain the precise humidity and temperature we needed," recalls P. Silas Bailey, president and treasurer of Lydia Cotton Mills, Clinton, S.C. "The addition of FOAMGLAS insulation on the *outside* of the existing walls stopped the sweating on the inside."

While ordinary insulations absorb moisture which cuts efficiency, FOAMGLAS' sealed glass cells are impervious to water vapor. This means that the rigid blocks of cellular glass can be depended on to help keep indefinitely the exact humidity and temperature required in a weave room.

Three new booklets tell how fireproof, strong, lightweight FOAMGLAS can benefit *you.* Please write now for sample and booklets, indicating if you are interested in insulation for buildings, piping or tanks and other equipment. Address inquiries to: Department K-54 . . .

PITTSBURGH CORNING CORPORATION
One Gateway Center • Pittsburgh 22, Pa.

FOAMGLAS®



the cellular glass insulation . . . it stays dry!

PITTSBURGH PC CORNING ®

Pittsburgh Corning
also makes
PC Glass Blocks

OBITUARIES

Fred M. Carter, 68, assistant traffic engineer for the California State Division of Highways, died May 1 in Ashland, Ore. Specializing in traffic control and highway lighting, he was one of the pioneers in developing traffic lighting systems for highways and was a director of the Institute of Traffic Engineers. He attended Yale University and started his professional career in the state of Washington. He moved to California in 1914 and worked as an engineer for various irrigation districts in the Sacramento and San Joaquin valleys.

George R. Johnson, 57, of Durham, N. C., general superintendent for the Nello L. Teer Company, contractors, died May 4. He had been with the Teer firm for 35 years.

Marcus B. Tark, 77, a consulting engineer, died April 28 at Philadelphia, Pa. For the last ten years he was a consultant for the city on sewage disposal plants. Prior to that for 28 years he was with the Link Belt Co.

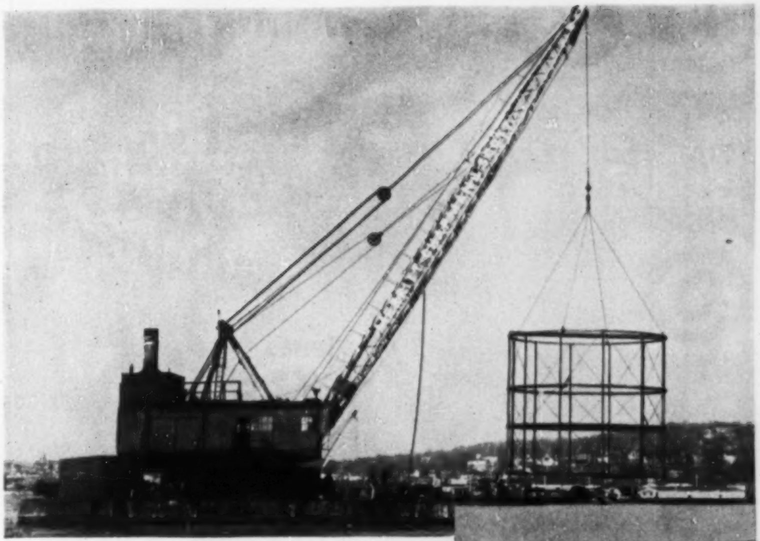
Harold Jenkins Dudley, 55, construction engineer and general contractor, died April 30 in Baltimore, Md. In business there for more than 20 years, he was graduated as a civil engineer from Cornell University in 1922.

Percy G. Cherry, 66, civil engineer of Point Claire, Que., died May 2. He formerly was associated with Canadian General Electric Co. and was vice-president of Might Directors Ltd. in Toronto.

Norman Marr, 63, civil engineer and Canada's top authority on international waters, died in Ottawa April 21. Director of the Engineering and Water Resources Branch of the federal department of Northern Affairs and National Resources, Mr. Marr was a graduate of the University of Toronto. For many years he was concerned with engineering studies of boundary waters and was a member of most international boards appointed to deal with such matters between Canada and the United States in recent years. For a long time he had been secretary of the Canadian committee of the World Power Conference.

Edmund J. Price, 71, a retired assistant chief engineer for the Reading Co., died April 27 at Whitehouse Station, N. J. He started with the Reading in 1902 as a rodman and

(Continued on page 124)



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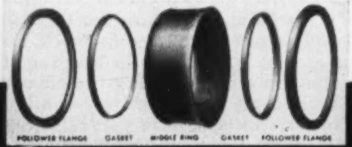

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worked his way up until 1920 when he was named assistant chief engineer. He retired in 1947. He was responsible for the design and construction of many of the railroad's bridges. His last project was Vine St. bridge near 12th St. The job had to be done without interfering with some 500 trains.

John Wilson Dougherty, 41, chief supervisory engineer of Bechtel Corp., Los Angeles, died May 1. He joined Bechtel in 1946 as design engineer after serving in the Corps of Engineers.

William J. Crawford, 66, proprietor of the William J. Crawford Excavating Co., Buffalo, N. Y., died May 2. Formerly he was a partner with Frank Simme in an excavating firm that did the work for several very large projects in Buffalo.

Bjarne B. Anderson, 62, of Smithtown Branch, L. I., N. Y., senior contracting manager of the American Bridge division of the U. S. Steel Corp., died in Brooklyn, N. Y. May 7. He studied in his native Norway and in Brooklyn Polytechnic Institute and Columbia University, joining American Bridge in 1916. In recent years he had negotiated contracts for his company for the United National Building, and N. Y. State Thruway Bridge at Nyack-Tarrytown, and many buildings for the N. Y. Worlds Fair in 1939. From 1917 to 1919 he was away in military service with the U. S. Army Corps of Engineers, serving overseas in World War I. He entered the service as a second lieutenant and was discharged as a brevet major, and with a citation from Gen. John J. Pershing, Commander of the American Expeditionary Forces. He returned to American Bridge following his military service and special graduate work, conducted on a military scholarship at Kings College, University of London. He got his civil engineering degree from Brooklyn Polytechnic Institute.

James F. Loughran, 70, chairman of the N. Y. State Bridge Authority, which controls and operates the Hudson River bridges at Poughkeepsie, Catskill and Bear Mountain, died at Kingston, N. Y., on May 10. He attended Rensselaer Polytechnic Institute, where he received a civil engineering degree, and Columbia University. He started his career as surveyor in the office of the New York State geologists' survey in Albany and Schoharie counties. In 1909 he became Ulster County superintendent of highways, a post he resigned last year.

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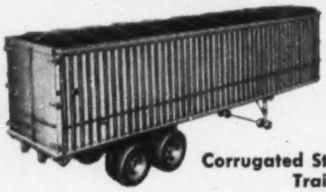
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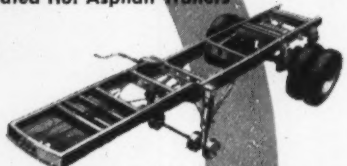
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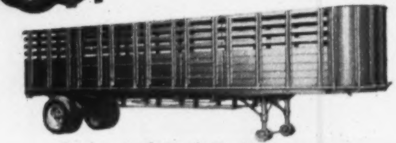
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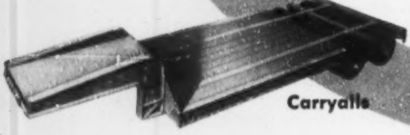
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A MESSAGE TO AMERICAN INDUSTRY • FIRST OF A SPECIAL SERIES

FINANCIAL AID TO HIGHER EDUCATION

Our Colleges and Universities Face Grave Financial Problems

For the past decade the nation's colleges and universities have been caught in a destructive financial squeeze. It is particularly destructive for the independent, privately endowed institutions. Unless extraordinary measures are taken to relieve this squeeze, it promises to become progressively worse. To let it do that is to court a national disaster.

This is the first of two editorials devoted to the financial plight of our colleges and universities. This first editorial deals with the character of the problem, present and potential. The second will indicate some things that need to be done about it, and particularly what American business might do.

Enrollment Soars, Income Lags

In broad outline, the financial problem that afflicts our colleges and universities is simple. The demand for their services has increased rapidly, and promises to keep on increasing even more rapidly. At the same time, their financial capacity to provide these services has lagged behind, primarily because of price inflation.

Between 1940 and 1950, college and university enrollment increased from approximately 1⅓ million to 2⅓ million—about 75 per cent. Over the same period, the educational income of these institutions, measured in terms of its actual purchasing power, increased only about 64 per cent. Thus, at the end of the decade, our colleges and universities as a group had, on the average, about 6 per cent less to spend per student than they had at the beginning. Meanwhile, the rapid advance of science and technology had made a good college or university course a much more expensive operation than it was in 1940. Since 1950, the latest date for which comprehensive figures are available, the financial squeeze on our colleges and universities has intensified, largely because of another wave of price inflation touched off by the Korean War.

Among the colleges and universities, the independent, privately endowed institutions are particularly hard pressed. In terms of actual purchasing power, the independent liberal arts colleges are now spending at least 20 per cent less per student than they spent in 1940. Public institutions of higher learning, supported out of tax revenues, have managed to increase slightly their expenditure per student. Otherwise, the financial squeeze on higher education as a whole would be even more severe.

Why Independent Colleges Are Hit Hardest

The principal reason why the independent colleges and universities are so hard up is the shrinkage in their income from endowments. These endowments, created in other days by gifts of generous benefactors to help pay the expenses of higher education, have been hit hard from two directions. During the war and postwar years, the tax collector took so large a part of the incomes and estates of wealthy people that this source of endowments has been greatly reduced. Over the same period price inflation cut in half the purchasing power of the income derived from existing endowments. In 1940 income from endowments provided 26 per cent of the total income of the independent colleges and universities. By 1950 it provided only 14 per cent. The figure is still lower today.

The financial plight of the independent colleges and universities is directly reflected in the salary status of their teaching staffs. In mid-1952 a national survey showed that, after adjustment for the increased cost of living, the salaries of those holding full professorial rank in these institutions were 12 per cent lower than they were in 1941-42. Junior teachers, with the rank of instructor, fared somewhat better. In terms of actual purchasing power, their salaries declined only 2 per cent over the 12-year period, largely because there is more direct competition for their services from industry. Over the same period, the real wages of industrial workers increased 55 per cent.

Time Will Not Provide a Cure

The plight of the colleges and universities, which is shared in some degree by all parts of our educational system, is not one that can be left to time for a cure. On the contrary, the financial problems of our institutions of higher learning will be intensified in the years ahead by the pressure of rapidly increasing enrollments. Present prospects indicate that during the next decade college and university enrollment will increase by about one-third, or from 2⅓ million to over 3 million. The problem of increased enrollments will become particularly acute toward the end of this decade when the babies born during the great surge of population in World War II are ready to enter college.

Such an increase in population as that now in prospect can be a tremendous asset to the nation. It is still a truth, even though it is worn a bit thin by frequent repetition at commencement exercises, that a nation has no resource more valuable than the education of its people. And the better the education, the more valuable the asset.

But to realize this, our colleges and universities must have the financial strength to handle the increased enrollments that face them in the years ahead. This means that we must relieve our independent colleges and universities, in particular, from the financial squeeze in which they are now caught and make them full partners in the economic well-being of the nation. Some of the means by which American business might help achieve this will be discussed in a second editorial.

This message is one of a series prepared by the McGraw-Hill Department of Economics to help increase public knowledge and understanding of important nationwide developments that are of particular concern to the business and professional community served by our industrial and technical publications.

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CONSTRUCTION REPORTS

Bids Asked—Low Bidders—Contracts Awarded—First Section—

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J. A. MAHONEY, M. O. WETZEL, L. M. WINISKI, M. E. SCIORRA, F. S. DEMBEK, Reports.
J. H. WEBBER, M. R. ROESSLER, E. R. HUBER, Statistics.

NEW ENGLAND

BIDS ASKED—HEAVY CONSTRUCTION

▲† **Mass., Bedford**—MAINTENANCE AND OPERATIONS HANGAR—B.A. On Or About 6/11—U. S. Eng., 857 Commonwealth Ave., Boston 15, Mass., A/C maintenance and operations hangar, administration and training bldg., Hanscom Air Force Base, ENG-19-016-54-106. $1,000,000-$1,200,000. CD 4/1.

BIDS ASKED—BUILDINGS

▲ **Conn., Naugatuck**—B.A. 5/24—U. S. Rubber Co., Footwear Div., 58 Maple St., 3 story, 200,000 sq. ft., 200x425 ft., rein-con. warehouse, Rubber Ave. $4,000,000 CD 12/15.

Mass., Cohasset—SCHOOL—B.A. 5/27—Town, Harry Reed, Jr., chn. Bldg. Comn., 143 Pond St., elementary school, Schier St. $400,000. Plans deposit $35, refundable. J. Williams Beal & Sons, 185 Devonshire St., Boston, archts. CD 9/9.

Me., Augusta—PATIENTS—B.A. 6/2—State, Dpt. Institutional Service, State House, patients bldg. State Hospital. $700,000. Plans deposit $35, refundable. Bunker & Savage, 283 Water St., archts. CD 5/4.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

MAINE—State Hy. Comn., Augusta,
Forest Frederick, Pittsfield, Me. CA **$395,890.** b. conc. 4.795 mi. F.A. Proj. F 044-1 (2), 44 Sullivan and Gouldsboro. Bids May 5.

▲ **MASSACHUSETTS**—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston,
S. & M. Constr. Co., 30 Salmon St., Providence, R. I. LB, **$1,542,673**, est. $1,500,000. hy. and bridge constr. Southern Circumferential Hy., Dedham and Westwood.

A. Simeone & Son, Inc., 60 Terrace St., Medford, Mass. LB, **$329,445**, est. $300,000 hy. and bridge Endicott St. and Northern Circumferential Hy., Danvers. Bids May 4. CD 4/14 and 4/21.

Bayer & Mingolla Constr. Co., Inc., 550 Park Ave., Worcester, Mass. LB, **$399,703**, est. $400,000. storage reservoir, dam and spillway, constr. pump station, lay water mains, Meadow Reservoir, Westminster, Hubbardston and Princeton, FITCHBURG, MASS. City, Thomas F. Kennedy, supt. Water Dpt., City Hall, Fitchburg, Mass. Bids May 4. CD 4/19.

BUILDINGS

LOW BIDS AND CONTRACTS

Consolidated Constructors, Inc., 807 Congress St., Portland, Me. LB **$400,000.** superstructure OFFICE, Main and Buck Sts., BANGOR, ME. Bangor Publishing Co., L. T. Jordan, pres., Bangor, Me. Bids May 6. CD 4/20.

▲ **Granger Constr. Co., Inc.**, 305 Main St., Worcester, Mass. LB **$1,082,760**, est. $744,000. Junior Senior HIGH SCHOOL next to elementary school, ASHLAND, MASS. Town, A. C. Cook, supt. Schools, Central St., Ashland, Mass. Bids May 6. CD 4/27.

George A. Fuller Co., 11 Beacon St., Boston, Mass. CA Est. **$400,000.** MEDICAL SCHOOL alterations, Bldg. B, Shattuck St., BOSTON, MASS. Harvard University, Medical School, 25 Shattuck St., Boston, Mass. Shepley, Bulfinch, Richardson & Abbott, 1 Court St., Boston, Mass., archts.

Del Signore Constr. Corp., 340 Main St., Worcester, Mass. LB **$430,000.** elementary SCHOOL, Sewall St. and South Rd., BOYLSTON, MASS. Town, J. B. Coyle, secy. Bldg. Comn., Boylston, Mass. Bids May 6. CD 4/20.

Clark & Smith, Inc., 1372 Hancock St., Quincy, Mass. CA Est. **$500,000.** 75,000 sq. ft. WAREHOUSE, Lenox St., NORWOOD, MASS. Plympton Press, Lenox St., Norwood, Mass. Harry J. Korslund, 506 Washington St., Norwood, Mass., archts.

J. J. Powers Co., 238 Main St., Cambridge, Mass. CA Est. **$500,000.** LIBRARY, WESTON, MASS. Regis College, 235 Wellesley St., Weston, Mass. Bids Apr. 29. CD 4/19.

▲ **Emil Muller Constr. Co.**, 70 South Ave., Rochester, N. Y. CA **$1,000,000.** SHOPPING CENTER, incl. 20 stores, parking space, 15 acre plot, Webster Square, WORCESTER, MASS. National Plazas, Inc., 36 W. 44 St., New York, N. Y.

▲ **Malony & Bubien Constr. Co.**, 66 Wickendon St., Providence, R. I., LB **$1,064,064**, est. $1,000,000. Proj. No. HOS-3; 3/1 GERIATRICS BLDG., State Hospital, HOWARD, R. I. State and Providence Plantations, F. A. Adams, purch, agt., State House, Providence, R. I. Bids May 5. CD 4/14.

▲ **A. Barbaresi & Son**, 10 Fiske Place, Mt. Vernon, N. Y. LB, **$1,617,770**, Eastman Junior High SCHOOL, Lockwood Road, GREENWICH, CONN. Town, Bd. Educ., Havemeyer Bldg., Greenwich, Conn. Alfonso Alvarez, Jr., 243 Loraine Ave., Upper Montclair, N. J., assoc. archt. CD 8/11.

▲ **Southern New England Constr. Co.**, 66 Sanford St., Hartford, Conn., CA, Est. **$1,000,000**, HOME, Tower Ave. and Coventry St., HARTFORD, CONN. Hebrew Home for the Aged, 276 Washington St., Hartford, Conn. Bids Mar. 10. CD 2/19.

J. C. Smith, Inc., 28 Baldwin Ave., New Canaan, Conn., LB, **$450,696**, Sharon Center SCHOOL, SHARON, CONN. Town School Bldg. Comn., Sharon, Conn. Bids May 5. CD 4/6.

MIDDLE ATLANTIC

† **Maryland**—BATTERY—B.A. 5/26—U. S. Eng., First and Douglas Sts. N.W., Wash. 25, D. C., Battery No. 12, launching and control area, vicinity of Rockville, ENG-49-080-54-58-(50). Plans deposit $25. CD 4/27.

▲ **Md., Baltimore**—B.A. 5/26—City, Bureau Bldg. Constr., 410 Municipal Bldg., Zone 2, concrete, steel, brick Incinerator No. 4, Pulaski Hy. $1,700,000. Plans deposit $50. Whitman, Requardt & Assoc., 1304 St. Paul St., Zone 2, engrs. CD 8/11.

† **N. Y., Sampson**—STORAGE—B.A. 5/27—Purch. & Contg. Office, Bldg. A-30, Sampson Air Force Base, Geneva, furnishing all labor, material, plant and equip. (with exception of Govt. furnished equip.), for alteration Southwest Ramp, Bldg. No. 44, Quinn Area to provide central sterile storage, Inv. No. 30-616-54-39. CD 9/14/51.

† **Pennsylvania**—ANTI-AIRCRAFT FACILITIES—B.A. On Or About 5/28—U. S. Eng., 121 N. Broad St., Phila., Zone 1, (a) buildings and structures: (1) three 30x76 ft. mess halls; (4) (a) three underground ammunition storage structures, (b) six underground ammunition storage structures, (5) ammunition assembly and test bldgs., (6) three generator bldgs., (7) three acid storage sheds; (8) misc. structures, such as concrete hardstands, footings and three 3,500 lb. chain hoist davits, (b) site imprvs., incl. clearing and grubbing, grading for roads and site drainage, 1,160 sq. yd. c. conc. pavement, 31,850 sq. yd. gravel surfaced roads and parking areas, drainage pipe under paved areas and approx. 1,800 lin. ft. earth mounds; (c) outside utilities, incl. primary and secondary electrical distr. sys., six water supply wells pumping equip. and distr. lines, nine sewage collection sys. with septic tanks and tile fields, for Anti-Aircraft Command in Chester and Delaware Counties, Inv. No. ENG-36-109-54-332. Plans deposit $50.

▲† **Del., Dover**—OPERATIONS, etc.—B.A. 6/10—U. S. Eng., 121 N. Broad St., Phila. 1, Pa., operations bldg., control tower and aircraft maintenance hangar and 4 wing hangars, Dover Air Force Base, ENG-36-109-54-190, $5,000,000. Whitside, Foster, Damon & Doame, Inc., Penna. Bldg., Wilmington, archts. CD 11/6.

† **Del., New Castle**—WAREHOUSE—B.A. 6/19—U. S. Eng., 121 North Broad St., Phila. 1, Pa., aircraft and troop supply warehouse and site imprvs., utilities, New Castle County Airport, ENG-36-109-54-326. Extended date. CD 5/3.

BIDS ASKED—BUILDINGS

▲ **Md., Towson**—SCHOOL—B.A. 5/25—Baltimore Co. Bd. Educ., Aigburth Rd., steel block, masonry Sparrows Point Junior Senior High School, Patapsco Neck, $1,500,000. Plans deposit $35, Fisher, Nes, Campbell & Assoc., 1020 St. Paul St., Baltimore, Zone 2, archts., CD 12/31/52.

Pa., West Middlesex—SCHOOL—B.A. 5/27—West Middlesex Joint School Dist. and State Public School Auth. Harrisburg, elementary and high school addn. $400,000. Plans deposit $25. The Thayer Co., 408 Greer Bldg., New Castle, archt.

▲ **Pa., Brackenridge**—HIGH SCHOOL—B.A. 6/11—Har-Brack Joint School Auth., Natrona, 2 story, brick, steel high school addn., alteration, $1,019,000. Plans deposit $35. Warnick Co., 106 E. Walnut St., Butler, archt. CD 12/18.

▲ **N. Y., New York**—DORMITORY—B.A. 6/1—New York University, Washington Square, Zone 3, dormitory, Plans deposit $100. Extended date. Eggers & Higgins, 100 E. 42 St., Zone 17, archts. CD 4/9.

† **Md., Indian Head**—BUILDING—B.A. 5/26—Dist. P. Wks. Office, Potomac River Naval Command, Naval Gun Factory, Wash., D. C., exten. of Bldg. 268 at Naval Powder Factory, NOY 83664. Plans deposit $10.

▲† **Md., Fort George G. Meade**—OPERATIONS—B.A. 6/18—U. S. Eng., 24 St. and Maryland Ave., Baltimore, operations bldg., appurtenant facilities, N.S.A. Proj., ENG-18-020-54-47. $25,000,000. Plans deposit $50. CD 3/10.

SOON LETS CONTRACT—BUILDINGS

Pa., New Bethlehem—PLANT—New Bethlehem Development Assoc., New Bethlehem, soon lets contract 1 story, approx. 200x300 ft., brick, block, steel plant, $500,000. Crawford Furniture Mfg. Corp., Jamestown, N. Y., lessee. Reliable Eng. Co., 2605 Beale Ave., Altoona, engr.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **NEW YORK**—Bureau Contracts & Accounts, The Governor Alfred E. Smith State Office Bldg., Albany,
Stento Constr. Co., Inc., 60 Exchange St., Binghamton, N. Y., LB **$348,927**, est. $427,000. c. conc. pavement 1.94 mi., misc. work 0.02 mi., 1.96 mi., Oneida-Verona, S.H. 5558, Prou. F-156 (3), Cont. No. 1, Contr. No. FARC 54-40, Oneida Co.

Edward D. Cammarota Co., Inc., 119½ Jay St., Schenectady, N. Y., LB **$270,882**, est. $298,000. b. conc. opt. 1.41 mi., misc. work 0.02 mi., 1.43 mi., Fultonville Village-Fonda Village, S.H. 864, Fultonville-Amsterdam Pt. 1, SH 5656 (relocated for N. Y. St. Thy.—Mohawk Sect.—Sub. 14). Contr. No. RC (MT) 54-60, Montgomery Co.;

S. J. Groves & Sons, Inc., Empire Bldg., Syracuse, N. Y. LB **$1,479,138**, est. $1,793,000, c. conc. 3.69 mi., b. conc. opt. 0.48 mi., bit. application and stone cover 0.21 mi., 4.38 mi. Syracuse: Park St. to North City Line, Syracuse-Mattydale, Luther Ave., Access Rd. and Co. Rd. 208 connection, Syracuse-Cicero, SH 5470 and Acc. Rds., Mattydale Interchange, Proj. UI 463 (9). Contr. No. FAC 54-3, FASH 54-3, FASS 54-5. FARC. 54-53. Onondaga Co.;

Cedric W. Wood, 134 Ruskin Rd., Buffalo, N. Y., LB **$115,274**, est. $150,000, b. conc. opt. 0.29 mi.; misc. work 0.02 mi., I-beam Bridge, 104.5 ft., 0.31 mi. Four Rod Rd., C. R. 344, Proj. S-296 (1), Contr. FASS 54-8, Erie Co.;

Harris Grand, 888 Montgomery St., Brooklyn, N. Y., LB **$278,051**, est. $300,000, roadside imprv. 13.87 mi. Palisades Interstate Parkway (Rte. 45-Bear Mt. Circle). Contr. No. P.I.P. 54-2, Orange and Rockland Counties;

Carlo Bianchi & Co., Inc., 24 Union Ave., Framingham, Mass., LB **$4,260,261**, est. $5,400,000, c. conc. 3.44 mi., c. conc. pavement on access road, 0.35 mi., b. conc. opt. 1.01 mi. misc. work 0.02 mi., three hy. seps. comp. I-beams, 282 ft., 287.1 ft. and 180.5 ft., two R. R. Sep. comp. I-beams, 169 ft. and 224 ft., one Br. R.C. twin box 67.3 ft., 4.47 mi. (Acc. 0.39), Palisades Interstate Park-Goshen Pt. 1B and 2, Oxford Rd., Town Rd. and Co. Rd. 13, Oxford-Chester SH 5297 and Oxford-Chester SH 8076, Proj. FI-IG-1050 (7), Cont. 2, FI-IG-1050 (6), Contr. FASH 54-9, FARC 54-62, Orange Co.;

Hendrickson Bros., Inc., 63 N. Central Ave., Valley Stream, N. Y., LB **$1,232,641**, est. $1,450,000, grading drainage 7.44 mi. Sunken Meadow Spur Parkway, Cont. 2, Contr. No. SMSP 54-1, Suffolk Co.;

J. J. Haggerty, Inc., Rogers Ave., Westhampton Beach, N. Y. LB **$242,385**, est. $258,000. b. conc. opt. 1.75 mi. Mattituck-Greenport Pts. 1 and 3, S.H. 8229, Proj. F-348 (5), Contr. FARC 54-29, Suffolf Co.;

received no bids May 6, sheet asph. 0.43 mi. misc. work 0.12 mi., alterations to IRT Elevated RR, alterations

(Continued on page 132)

PROJECTS COVERED

Projects—By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $34,000; other public works $60,000; industrial buildings $82,000; other buildings $300,000.

Classes of Construction

(Name in order of Listing)

Water Supply
Sewers, Waste Disposal
Bridges
Streets & Roads
Earthwork, Waterways
Latin America
Public Buildings
Commercial Buildings
Industrial Buildings
Unclassified

Stages Reported

PROPOSED WORK: Including appointment of engineers or architects.

BIDS ASKED (new announcements only). For full calendar, see also preceding issues of ENR.

LOW BIDDERS: On jobs below $500,000 value all low bidder news will be the final reports published on the projects inwloved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: Except awards to low bidders previously reported in low bidder stage.

Dates shown are of issue in which last previous report was published.

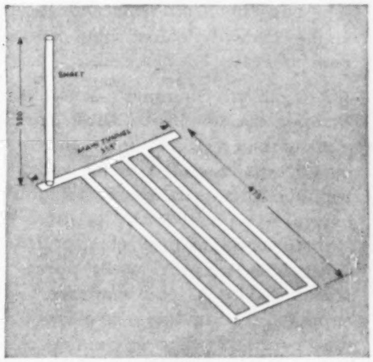
Symbols and Abbreviations Include:

†	Federal Government
▲	Project of $1,000,000 or over.
B.A.	Bids Asked
ENR	Engineering News-Record
CD	Engineering News-Record Construction Daily

Du Pont "Gelex" helps build underground liquefied gas storage tank

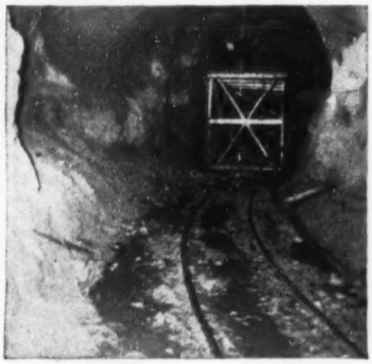
When MacLean-Grove & Co., Inc., New York, contractors for the National Petro-Chemicals Corporation, Tuscola, Illinois, began work on a unique deep underground storage tank for liquefied propane gas . . . they selected Du Pont "Gelex" and Du Pont Delay Electric Blasting Caps to do the job. Past experience had proved to them that this blasting "team" could be depended upon.

MAIN SHAFT sunk about 370′ through 200′ of overburden, then limestone and high silica shale. View from 19′ x 15′ main tunnel.



ISOMETRIC SKETCH of operation plan. Five tunnels were driven from 335′ horseshoe-shaped main drift.

ARCHED TUNNEL at right extends 475′; forms part of underground storage "tank" for several million gallons of liquefied propane gas.



DRILLING JUMBO is shown in position at face of one of the five tunnels. Average round used 50 holes.

DRILLED FACE, loaded and connected up . . . ready for the blast. Ten periods of Du Pont Delay Electric Blasting Caps were used.

RESULT OF TYPICAL BLAST shows well-broken rock easily removed with ¾-yard loader...helped speed construction of "tank."

On your next tunnel job try using economical Du Pont "Gelex" and Du Pont Delay Electric Blasting Caps . . . a dependable blasting "team." Your Du Pont Explosives representative will gladly give you complete information about these and other Du Pont products for blasting. E. I. du Pont de Nemours & Co. (Inc.), Explosives Department, Wilmington 98, Delaware.

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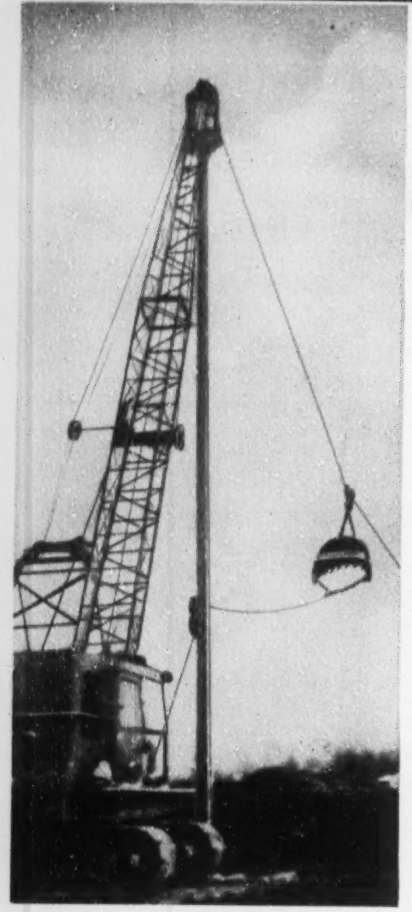

"We Didn't Build a Bridge, We Moved a River"...

A. S. Wikstrom, Inc.

One Sauerman Scraper helped by spreading 200 cu. yds. of muck per hour

Spreading 260,000 cu. yds. of plastic material as excavation progressed in the rechanneling of the winding Clyde River was one of the jobs done by A. S. Wikstrom, Inc. in the Thruway construction near Seneca Falls, N. Y.

A 6 cu. yd. Sauerman Crescent Scraper, equipped with carrier and track cable, working from a 1½-cu. yd. crane handled the job at the rate of 200 cu. yds. per hr. Length of haul was about 300 ft. An Athey Wagon served as an anchor for the track cable and provided the necessary mobility. A spud was used to support the boom and also allowed the operator to take advantage of almost the full boom height for fast gravity return of the scraper to digging point.

This set-up supplanted an earlier recasting arrangement using several machines. It operated at a considerable savings over previous cost.

For more details on the Clyde River project ask for Sauerman News No. 139. Request Field Report 219 and Catalog J. for specific information on the use of scrapers with boom machines. Sauerman engineers will tell you the largest Crescent scraper your dragline or tractor can handle, if you will give us the make and model number of your machine.

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(Continued from page 130)

to Van Cortland Park utilities 0.55 mi., Major Deegan Expressway Extens. Cont. 8A, Proj. U-1082 (20). Contr. No. FAMDE 54-2, Bronx Co., est. **$700,000.** CD 4/12.

▲ **NEW JERSEY**—State Hy. Dpt., State Hy. Office Bldg., 1035 Parkway Ave., Trenton,

George M. Brewster & Sons, 275 W. Ft. Lee Rd., Bogota, N. J., CA, **$7,804,829,** grading, bridges, paving for Route 42, North-South Freeway and new Delaware River Bridge approaches and connections, Fed. Proj. U-193 (1), Camden Co. Bids Apr. 27, awarded May 6. CD 4/28, under LB.

▲ **NEW JERSEY**—New Jersey Hy. Auth., State Hy. Office Bldg., 1035 Parkway Ave., Trenton,

Union Building & Constr. Corp., 631 Main Ave., Passaic, N. J., CA, **$2,599,628,** grading, drainage, paving and bridges for Section 1 of Garden State Parkway Contract No. 47, from Hazel St. to Lexington Ave., Clifton, Passaic Co. Bids Mar. 15. CD 3/30, under LB.

▲† **R. A. Prendergast,** Virginia and Atlantic Aves., Atlantic City, N. J., CA, **$389,862,** Schedule A;

A. A. Salerno, 41 Relyea Place, New Rochelle, N. Y., CA, **$411,187,** Schedule B; CA, **$381,683,** Schedule C, defense facility, Burlington and Camden Counties, NEW JERSEY U. S. Eng., 121 N. Broad St., Phila. 1, Pa. The Ballinger Co., 121 N. Broad St., Phila., Pa., archts. Grand total $1,182,732.

▲† **Tecon Corp.,** Box 206, Wrightstown, N. J., CA, **$2,644,709,** apron, taxiway and warm-up pad exten., widening and strengthening N.E.-S.W. Runway, McGuire Air Force Base, ENG-36-109-54-204, WRIGHTSTOWN, N. J. U. S. Eng., 121 N. Broad St., Phila., Pa. Bids Apr. 20, awarded Apr. 30. CD 4/29, under LB.

PENNSYLVANIA—State Hy. Dpt., 506 North Office Bldg., Harrisburg,

Donald B. Stabler, 635 Lucknow Lane, Harrisburg, Pa. CA **$973,436.** crushed aggregate base with bit. surf. variable in width, 51,140 ft. T. R. U. S. 6, Pike Co. Bids Apr. 30, awarded May 8. CD 5/5, under LB.

▲ **PENNSYLVANIA** — State Hy. Dpt., 506 North Office Bldg., Harrisburg,

Ralph V. Daniels, Inc., 338 N. 29 St., Camp Hill, Pa. LB, **$298,258,** constr. 10,883 ft. crushed aggregate base and bit. surf. 22 ft. wide, L. R. 38031 (2), Lebanon Co.;

Keelor Constr. Co., Pennsburg, Pa., LB, **$483,781,** constr. 23,077 ft. crushed aggregate base with bit. surf. variable in width, two I-beam bridges, L. R. 365 (6) 57037 (2), 57036 (4), 941 (2), Susquehanna Co.;

F. D. Kessler, Inc., Northumberland, Pa., LB, **$972,371,** constr. 30,216 ft. c.-conc. pavement variable in width, two I-beam bridges, T. R. 11, Montour and Columbia Counties;

J. Paul Laubach, P.O. Box 68, Benton, Pa., LB, **$173,552,** wid'n and overlay 16,950 ft. existing hy. with crushed aggregate base and bit. surf. variable in width, T. R. 487, Sullivan Co.;

Pennsylvania Supply Co., 10 and Mulberry Sts., Harrisburg, Pa., LB, **$82,052,** overlaying 7,827 ft. existing road with crushed aggregate base and bit. surf. 22 ft. wide, T. R. 15, Cumberland Co.;

Trumbell Constr. Co., P.O. Box 382, Hays P. O., Pittsburgh 17, Pa., LB, **$167,016,** surf. 16,640 ft. existing road with bit. surf. variable in width, T. R. U. S. 30, Allegheny Co. Bids May 7. CD 4/16.

† **Dunbar & Sullivan Dredging Co.,** 2312 Buhl Bldg., Detroit, Mich., LB **$253,125.** dredging in Delaware River at Port Richmond Anchorage, Phila. 36-109-54-33, PENNSYLVANIA. U. S. Eng., 121 N. Broad St., Phila., Pa. CD 5/5.

PENNSYLVANIA—State Hy. Dpt., 506 North Office Bldg., Harrisburg,

C. J. Langenfelder & Son, Inc., 8427 Pulaske Hy., P.O. Box 5106, Baltimore, Md., CA **$1,821,934,** constr. 3.49 mi. divided four-lane hy. of rein.-con. pavement variable to 24 ft. wide each side of concrete divisor, variable to 4 ft. wide; wid'n. existing divided hy. with rein.-con. variable to 12 ft. on each side and crushed aggregate base with bit. surf. variable to 24 ft., one concrete box, one rein.-con. structure over Tributary to Common Creek; two rein.-con. bridges over Tributary to Common Creek and two I-beam bridges over Leg. Rt. 09157 and Twp. Rd. 323, U.S. Rte. 13 in Tullytown Boro, Falls Twp., Bucks Co. Bids Apr. 23. CD 4/27, under LB.

Consolidated Constr. Co., 28 Cooper St., Woodbury, N. J. CA **$522,700,** est. $579,145, refuse incinerator, etc., ABINGTON, PA. Abington Twp. Comn., Abington, Pa. Bids Apr. 26. CD 5/5, under LB.

Union Paving Co., 1227 N. Broad St., Phila., Pa. LB **$136,015.** paving various locations, Bid No. 3239, PHILA., PA. Dpt. Procurement, City Hall Annex, Phila., Pa. CD 10/30/44.

Allied Contractors, 204 E. Preston St., Baltimore 2, Md. CA **$321,584.** Base Bid A, Nike I launching and control area, site W-25-C1, Davidsonville, ENG-18-020-54-35, MARYLAND. U. S. Eng., 24 St. and Maryland Ave., Baltimore 18, Md. Bids Apr. 29, awarded May 5. CD 4/12.

MARYLAND—State Rds. Comn., 108 E. Lexington St., Baltimore,

Geo. F. Hazelwood, Cumberland, Md. LB **$825,598.** grading, wid'n., drainage, surf. relocation 4.64 mi. State Rte. 135, McCook-Westernport, Contr. A 457-1-620, Allegany Co.;

Contee Sand & Gravel Co., Laurel, Md. LB **$75,085.** resurf. 1.663 mi. State Rte. 103 from U.S. Rte. 29 to State Rte. 175, Contr. HO 271-3-720, Howard Co. Bids May 4. CD 4/27.

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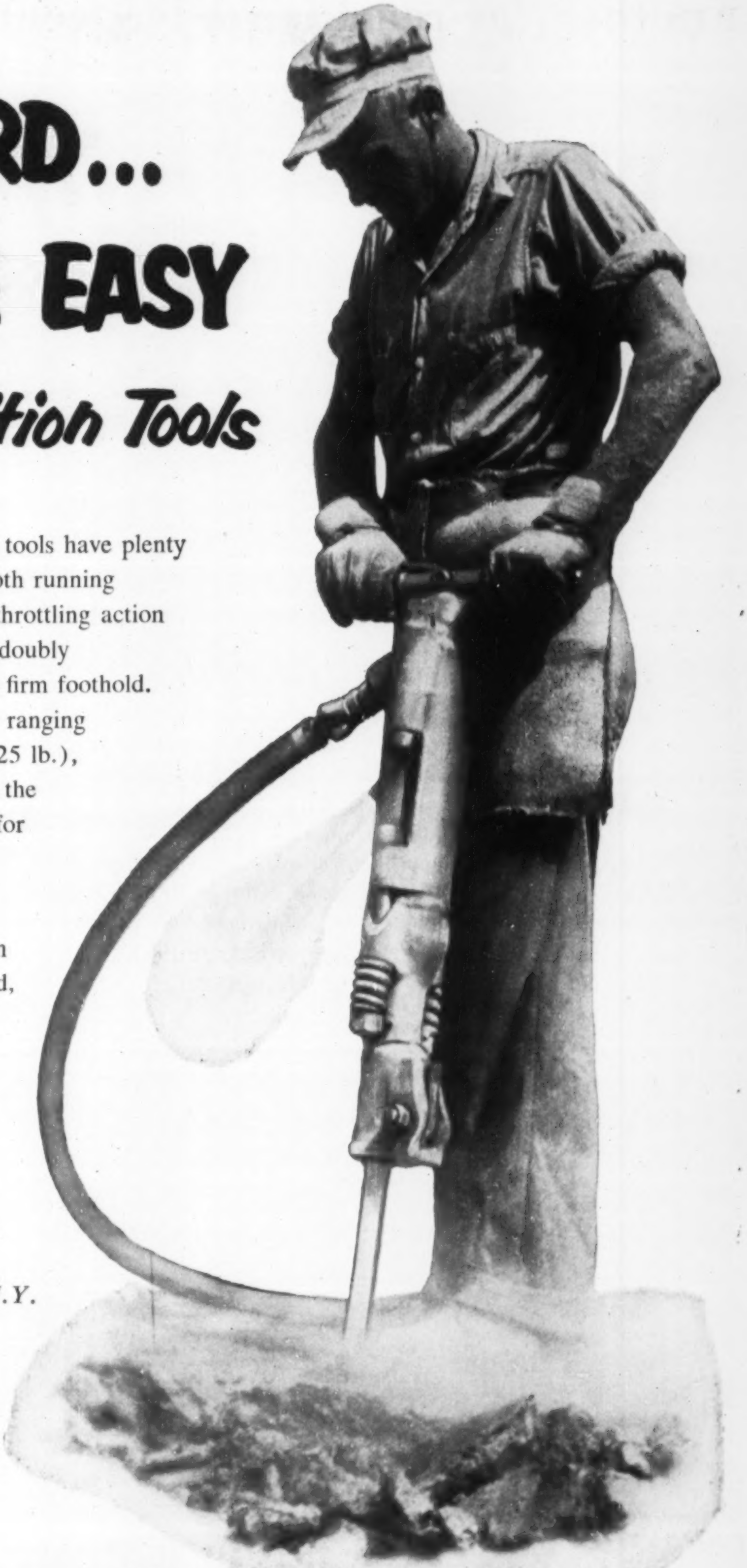

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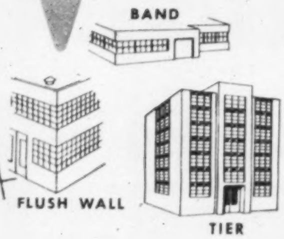

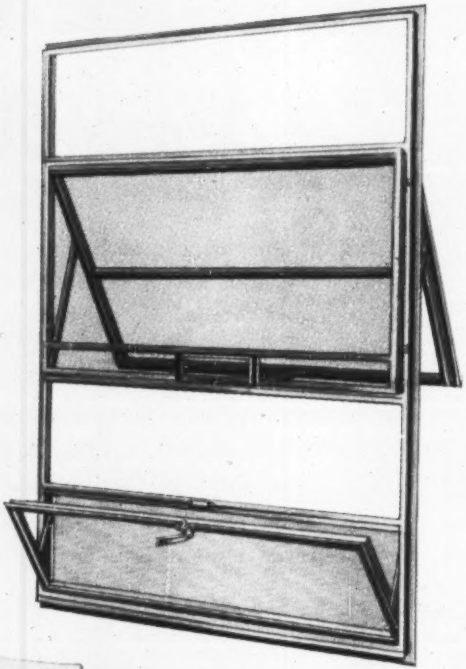

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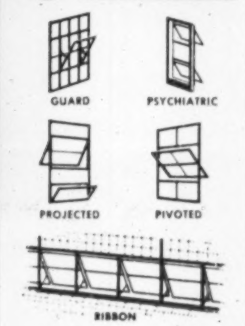

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(Continued from page 132)

BUILDINGS

LOW BIDS AND CONTRACTS

Kellner Builders, c/o Seelig & Finkelstein, archts., 153 Pierrepont St., Brooklyn 2, N. Y. Owner Builds. **$500,000.** 50 HOUSES, tract on Bay 11 St. between Cropsey and Independence Aves., BROOKLYN, N. Y.

▲ **Krinsky & Rosenblum,** c/o Herman York, archt., 90-04 161 St., Jamaica, N. Y. Owner Builds. **$3,000,000.** 300 HOUSES, Jericho Turnpike, east of CENTEREACH, N. Y.

▲ **Glen Cove Acres,** c/o Alwin Cassens, Jr., archt., 145 S. Franklin Ave., Valley Stream, N. Y. Owner Builds. **$3,000,000.** 150 HOUSES, tract at Duck Pound Rd. and Viola Dr., GLEN COVE ,N. Y.

Kings Point Acres, c/o Samuel Paul, archt., 89-51 164 St., Jamaica 3, N. Y. Owner Builds. **$500,000.** 14 HOUSES tract on northside, Hicks Lane, GREAT NECK, N. Y.

▲ **Valmont at Elwood Homes,** c/o Long Island Homes, 168-12 Hillside Ave., Jamaica, N. Y. Owner Builds. **$2,000,000.** 150 HOUSES, 40-acre tract, Elwood Rd., HUNTINGTON, N. Y.

▲ **Miller Homes at Kings Park,** c/o Trylon Realty Co., 98-89 Queens Blvd., Forest Hills, N. Y. Owner Builds. **$1,600,000.** 200 HOUSES, tract at East Northport and Old Comack Rds., KINGS PARK, N. Y.

▲ **Fetner Realty & Constr. Co.,** 49 E. 12 St., New York 3, N. Y. Owner Builds. **$1,000,000.** two APARTMENTS for 109-families, North Chatsworth Ave. and Washigton Sq., LARCHMONT, N. Y. S. J. Kessler & Sons, 551 Fifth Ave., New York 17, N. Y., archts.

P. Kretzer & Son, Inc., 32-15 Lawrence St., Flushing, N. Y. CA. Est. **$500,000.** 1 story DISTRIBUTION CENTER, block bounded by Hunters Point Ave., 48 Ave., 31 Pl and 31 St., LONG ISLAND CITY, N. Y. Star Liquor Dealers, Inc., 47-42 37 St., Long Island City, N, Y. Charles M. Lobejager, 45-44 204 St., Bayside, N. Y., archt.

▲ **Zimmerman & Baker,** c/o Karl Block, archt., 7 Landsdown Ave., Merrick, N. Y. Owner Builds. **$1,000,000.** 67 HOUSES, 21-acre tract, Hicksville-Massapequa Rd., north of Southern State Pkway, MASSAPEQUA, N. Y.

▲ **United Home for Aged Hebrews,** 391 Pelham Rd., New Rochelle, N. Y. Separate Contracts. **$1,500,000.** 6 story BUILDING at site, NEW ROCHELLE, N. Y. Arthur Weiser, 20 E. 53 St., New York 22, N. Y., archt.

Syndicate, c/o Leo Stillman, archt., 332 E. 149 St., New York 51, N. Y. Owner Builds. **$350,000.** 8 story APARTMENT for 32-families, 11 E. 88 St., NEW YORK, N. Y.

John & Vincent Surdi, c/o Lane Realty, 107-40 Queens Blvd., Forest Hills, N. Y. Owner Builds. **$500,000.** 50 HOUSES, tract on Third St., WEST BABYLON, N. Y.

† **U. S. Eng.,** 80 Lafayette St., New York 13, N. Y., cancelled bids to have been opened May 25, rehabilitation existing BARRACKS, United States Military Academy, Serial No. ENG-30-075-54-275. WEST POINT, N. Y. **$250,000-$500,000.** CD 4/28.

▲ **Bellmawr Building Corp.,** 1322 Airdrie St., Phila., Pa., Separate Contracts, **$2,500,000,** RESIDENTIAL DEVELOPMENT, Browning Lane, BELLMAWR, N. J. Dante J. D'Anastasio, 1815 Federal St., Camden, N. J., archt.

▲ **Overlook Park Estates,** c/o Turano-Gardner Assocs., archts., 35 W. 53 St., New York 19, N. Y., Owner Builds, **$1,000,000,** 30 HOUSES on tract adjoining Englewood Colf Club, near Route 4, ENGLEWOOD, N. J.

Richard Gardens Apartments, c/o Peter H. Butler, archt., 172 State St., West Englewood, N. J. Owner Builds, **$600,000,** five 2 story APARTMENTS for 66 families, Raven Ave., HASBROUCK HEIGHTS, N. J.

▲ **Henry Spiegel,** Witherspoon Bldg., Phila., Pa., Separate Contracts, **$2,500,000,** 226 unit RESIDENTIAL DEVELOPMENT, Red Bank Ave., WOODBURY, N. J. Dante J. D'Anastasio, 1815 Federal St., Camden, N. J., archt.

F. A. & G. J. Hayden, Newtown Square, Pa., Separate Contracts. **$900,000.** RESIDENTIAL DEVELOPMENT, Paxon Hollow Rd. and Sproul Rd., BROOMALL, PA. Karl F. Otto, 1528 Buckingham Dr., Rosemont, Pa., archt.

Charles Sheldrake, Malvern, Pa., Separate contracts. **$350,000.** RESIDENTIAL DEVELOPMENT, Foss Ave., DREXEL HILL, PA.

▲ **Nason & Cullen,** 6522 Vine St., Phila., Pa. **$1,000,000.** ELEMENTARY and Junior HIGH SCHOOL, Mercy, GWYNEDD VALLEY, PA. Academy of The Sisters of Mercy, Gwynedd Valley, Pa. Bids Apr. 27. CD 4/16.

Raymond Cooper, 549 Gorgas Lane, Phila., Pa. Separate Contracts. **$833,000.** 49 RESIDENCES, Germantown Pike, LAFAYETTE HILL, PA.

Max Essel, 341 Michigan Ave., Swarthmore, Pa. Separate Contracts, **$336,000.** RESIDENTIAL DEVELOPMENT, MEDIA, PA.

▲ **United Constr. Co.,** 1204 Lincoln Ave., Pittsburgh, Pa., LB **$1,074,000.** Federal Housing Proj. 18-2, 14 brick, veneer. HOUSING, MONESSEN, PA. Westmoreland Co. Housing Auth., Court House, Greensburg, Pa. Bids May 6. CD 4/15.

Glanzberg Constr. Co., 734 S. 5 St., Phila., Pa. Separate Contracts, **$550,000.** 45 RESIDENCES, Henry and Monastery Aves.; **$350,000,** RESIDENTIAL DEVELOPMENT, 13 and Lakeland Sts. and Henry and Rector Aves., PHILA., PA.

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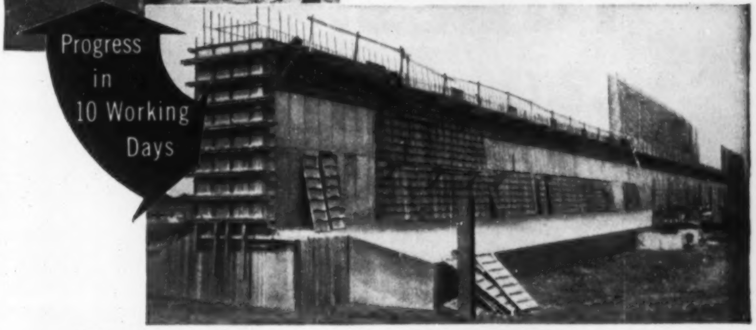

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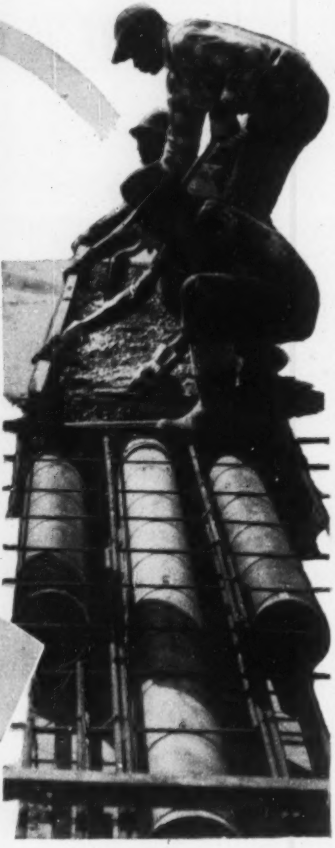
AKRON, IND.

SONOCO



Pouring concrete slab —Paper mill.

Ricci Constr. Co., 11 W. Butler Ave., Ambler, Pa., Separate Contracts. **$300,000.** RESIDENTIAL DEVELOPMENT, Chestnut Hill Sect., PHILA., PA.

▲ **Sigmund Weintraub**, Market St. Natl. Bank Bldg., Phila., Pa., Separate Contracts, **$2,000,000.** RESIDENTIAL DEVELOPMENT, Loretto, Frontenac Sts., etc., PHILA., PA. Lewis J. Cowan, 1505 Rine St., Phila., Pa., archt.

Somerton Terrace Homes, Inc., 6219 N. 11 St., Phila., Pa., Separate Contracts. **$675,000.** RESIDENTIAL DEVELOPMENT, Ferndale, Waring and Pew Sts., PHILA., PA. Henry S. Berg, 1411 Walnut St., Phila., Pa., archt.

Glanzberg Constr. Co., 734 S. 5 St., Phila., Pa. Separate Contracts. **$310,000.** RESIDENTIAL DEVELOPMENT, Benner St., etc., PHILA. PA. Henry S. Berg, 1411 Walnut St., Phila., Pa., archt.

Layman Homes, Inc., 7201 Brous St., Phila., Pa., Separate Contracts. **$305,000.** RESIDENTIAL DEVELOPMENT, Brous St., PHILA., PA. Henry S. Berg, 1411 Walnut St., Phila., Pa., archt.

▲ **Stabler Building Corp.**, College Theatre Bldg., Swarthmore, Pa., CA, **$1,050,000.** RESIDENTIAL DEVELOPMENT, Rose Valley Rd., etc., WALLINGFORD, PA. Wallingford Development Co., c/o P. Forrest, College Theatre Bldg., Swarthmore, Pa.

S. G. Mastriani Co., 237-41 Lincoln Bldg., Scranton 3, Pa., LB **$935,000.** general constr. addn. and alterations to Coughlin HIGH SCHOOL, WILKES-BARRE, PA. Wilkes Barre School Dist. Auth., 81 N. Washington St., Wilkes-Barre, Pa. Bids Apr. 30.

Millison Constr. Co., 217 N. Monument St., Baltimore, Md. LB **$369,000**, est. $300,000. brick, concrete, steel, Harmans Elementary SCHOOL, Harmans, ANNAPOLIS, MD. Anne Arundel Co., Bd. Educ., Annapolis, Md. Bids May 4. CD 4/27.

Piracci Constr. Co., 2458 Woodbrook Ave., Baltimore, Md. LB **$579,000.** steel, concrete, brick Western High SCHOOL addn., alterations, BALTIMORE, MD. City, Bureau Bldg. Constr., 410 Municipal Bldg. Baltimore, 2, Md. Bids May 5. CD 4/27.

Jas. Meyerhoff Co., 10 E. Fayette St., Baltimore, Md. Owner Builds **$391,000.** 63 frame, brick DWELLINGS Edgefield and Ellis Rds., Woodcroft Sect., BALTIMORE, MD.

Silvercreek Constr. Co., Milford Rd. and W.M.R.R., Baltimore, Md. CA, **$648,000.** 72 frame DWELLINGS, Silvercreek, Templeclift and Cliffedge Rds., Silvercreek Sect., BALTIMORE, MD. Wm. F. Chew, Inc., Milford Mile Rd. and W.M.R.R., Baltimore, Md.

† **Dominion Contractors, Inc.**, 10 W. 23 St., Baltimore, Md. CA, **$445,252.** DEFENSE FACILITY, ENG-18-020-54-40, Army Chemical Center, EDGEWOOD, MD. U. S. Eng., 24 St. and Maryland Ave., Baltimore, Md. Whiteside, Foster, Damon & Doane, Penna R.R. Bldg., Wilmington, Del., archts. CD 10/1/51.

Capitol Constr. Co., 1 S. Beachwood Rd., Baltimore, Md. LB, **$945,000.** 4 story, masonry DORMITORY wing, Maryland House of Correction, JESSUP, MD. State, Dpt. P. Imprvts., 506 Park Ave., Baltimore 1, Md. Bids Apr. 29. CD 4/19.

▲ **Norair Engineering Corp.**, 1118 22 St. N.W., Wash., D. C., Owner Builds, **$2,000,000**, OFFICE, 1122 22 St. N.W., WASH., D. C. J. H. Graham & Assocs., 2430 Pennsylvania Ave. N.W., Wash., D. C., archts.

SOUTH

BIDS ASKED—HEAVY CONSTRUCTION

Va., Victoria—POWER LINE—B.A. 5/25—Town, Town Hall, electric power transmission line. Plans deposit $10. R. Stuart Royer & Assocs., 15 W. Clay St., Richmond, engrs.

† **Ala., Selma**—ADMINISTRATION, etc.—B.A. 5/27—U. S. Eng., P. O. Box 1169, Mobile, Zone 7, addnl. administration and storage facilities, Craig Air Force Base. CD 7/18/51.

† **Va., Norfolk**—WATER TANK—B.A. 6/1—P. Wks. Office, Fifth Naval Dist., U. S. Naval Base, replacement of 250,000 gal. water tank, Naval Air Station, NOY 82910, Spec. 42740. Plans deposit $10.

BIDS ASKED—BUILDINGS

W. Va., Weston—WARD ADDNS., etc.—B.A. 6/2—W. Va. Bd. Control, State Capitol Bldg., Charleston, ward bldg. addn. and fireproofing, Weston State Hospital for Insane. Plans deposit $25. Edward J. Wood & Sons, 117 S. Third St., Clarksburg, W. Va., archts. CD 7/20.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **LOUISIANA**—State Hy. Dpt., Highway Office Bldg., Baton Rouge,

W. R. Aldrich & Co., Box 1751, Baton Rouge, La. LB **$1,139,349.** c. conc. 10.067 mi. Prairieville-Sorrento Hy., State Rte. 1500, S.P. 7-07-08, F.A. Proj. FI-I-172 (7, Ascension Parish;

Delta Paving Co., Box 8044, New Orleans, La. LB **$839,732.** c. conc 7.917 mi. Fillmore-McIntyre Hy., State Rte. No. 4, S.P. 1-03-21 and 1-04-17, F.A. Proj. F.I. 75 (9), F.I.116 (11), Bossier and Webster Parishes;

Barber Bros. Co., Box 629, Baton Rouge, La. LB **$71,103.** bit. hot mix wearing course 4.544 mi. St. Francisville-Thompson Creek Hy., State Rte. No. 3, S.P. 19-04-20, West Feliciana Parish;

W. H. Smith, 212 Bossier Bank Bldg., Bossier City, La. LB **$90,314.** bit. surf. tr. (asph. cement) 8.058 mi. Downsville-D'Arbonne Hy., State Rte. 794, S.P. 317-03-04, 317-04-06 and 317-05-02, Lincoln and Union Parishes. Bids Apr. 28. CD 3/31, 4/14 and 4/22.

BUILDINGS

LOW BIDS AND CONTRACTS

John Tester & Son, 1620 2nd St. S.W., Wash., D. C., CA **$615,711**. North Mt. Vernon Elementary SCHOOL, ALEXANDRIA, VA. City School Bd., 208 N. Columbus St., Alexandria, Va. Bids Apr. 21. CD 4/27, under LB.

Culpepper Building & Supply Co., Culpepper, Va. CA **$320,796**. constr. Pimmit Hills Elementary SCHOOL, FAIRFAX, VA. Fairfax Co. Bd. Educ., Fairfax, Va. Bids Apr. 29. CD 4/15.

▲ **J. D. Williams, Inc.,** 226 W. Broad St., Falls Church, Va. Owner Builds. Approx. **$2,000,000**. 180 one story bsmnt. masonry RESIDENCES, near FAIRFAX, VA. Spector & Montgomery, 1073 W. Broad St., Falls Church, Va. archts.

† **Lang Constr. Co.,** 21 S. King St., Hampton, Va. CA **$693,700**. 600-man, 3 story, rein. con. lift slab floor and roof constr. BARRACKS, Naval Amphibious Base, NOY 81538, LITTLE CREEK, VA. P. Wks. Office, Fifth Naval Dist., U. S. Naval Station, Norfolk, Va. Bids Mar. 9. CD 3/12, under LB.

▲ **MacDonald Eng. Co.,** 188 W. Randolph St., Chicago 1, Ill. CA Approx. **$2,500,000**. lithium PLANT addn., incl. rotary kiln and driers, grind mills, raw storage tunnel and boiler plant, SUNBRIGHT, VA. Foote Mineral Co., 18 W. Chelten Ave., Phila. 44, Pa. B. E. Crawford, c/o owner, ch. engr. CD 6/17/52.

E. L. Harris & Son, Inc., 150 Knollwood Dr., Charleston, W. Va., CA, **$390,000,** part 2 and 3 story, 50x162 ft., face, brick, concrete block CHURCH addn. CHARLESTON, W. VA. Christ Methodist Church, Quarrier and Morris Sts., Charleston, W. Va. Awarded Apr. 30. CD 5/25.

Wm. Muirhead Constr. Co., Durham, N. C., LB, **$707,707**. Southern HIGH SCHOOL, DURHAM, N. C. Durham Co. Bd. Educ., Durham, N. C. Archie Royal Dairs, Durham, N. C. archt. Bids May 5.

R. H. Pinnix, Gastonia, N. C., LB **$578,437,** D. W. Daniel HIGH SCHOOL, SIX MILE, S. C. Pickens Co. School Dist. A, Pickens, S. C. Heyward S. Singley, 1845 Assembly St., Columbia, S. C., archt. Bids May 4.

▲† **Thompson & Street Constr. Co.,** 72 11 St. N.E., Atlanta, Ga., CA, **$2,072,000,** two WAREHOUSES, U. S. Marine Corps Supply Depot, NOY 81254, ALBANY, GA. Dpt. Navy, P. Wks. Office, Naval Base, S. C. Bids Apr. 20, CD 4/27, under LB.

J. E. Ratcliff, Box 1943, Alexandria, La. LB **$771,370**. mental tuberculosis HOSPITAL, PINEVILLE, LA. State Bldg. Auth., State Capitol, Baton Rouge, La. Bids Apr. 28. CD 4/13.

Flemingsburg Lumber Co., Flemingsburg, Ky. LB **$749,000.** County High SCHOOL and Eastern Elementary SCHOOL, Long Lick, GEORGETOWN, KY. Scott Co. Bd. Educ., Georgetown, Ky. Brock & Johnson, 159 Ban St., Lexington, Ky., archts. Staggs & Fisher, 170 Walnut St., Lexington, Ky., engrs. Bids Apr. 30.

Girdler Corp., 228 E. Broadway, Louisville, Ky. Owner Builds. **$550,000**. concrete catalyst PLANT for National Cylinder Gas Co., on Crittenden Dr., LOUISVILLE, KY.

Virginia Engr. Co., 29 St. and James St., Newport News, Va. CA **$913,000**. general contract 520x326 ft. WAREHOUSE, 102x140 ft. OFFICE, 10x52 ft. GARAGE, railroad siding, paving, LOUISVILLE, KY. The Kroger Co., 35 E. Seventh St., Cincinnati, O. Bids Apr. 23, awarded Apr. 30. CD 5/3, under LB.

MIDDLE WEST

BIDS ASKED—HEAVY CONSTRUCTION

† **O., Columbus**—ELECTRICAL DISTR.—B.A. 5/25—U. S. Eng., 237 Fourth Ave., Huntington 18, W. Va., constr. electrical distr. and apron grid duct wiring sys. at Lockbourne Air Force Base, Serial No. ENG-46-022-54-23. Plans deposit $5. CD 4/27.

Mich., Whitehall—B.A. 5/26—City, Howard Gwinnup, clk., Contr. 3, furnish sludge and sump pumps, settling tank mechanism, screening mechanisms, chlorine machine, laboratory, furniture, sludge heater and sewage pumps for sewage treatment plant, Drury, McNamee & Porter, 306 State Savings Bank Bldg., Ann Arbor, engrs. CD 4/16.

† **Illinois**—B.A. 6/10—U. S. Eng., 420 Locust St., St. Louis, 2, Mo., abatis dikes across existing levee borrow pits, Harrisonville and Ivy Landing Drainage and Levee District, Proj. Item VI-C, Monroe County, CIVENG-23-065-54-108. Extended date. CD 5/7.

BIDS ASKED—BUILDINGS

▲ **Mich., Battle Creek**—MANUFACTURING—B.A. 5/25—At office Giffels & Vallet, Inc., archt., 1000 Marquette Bldg., Detroit, masonry food mfg. bldg., rehabilitation and imprvs., power plant, for Kellogg Co., Battle Creek, Mich. $3,000,000. CD 4/7.

▲ **Wis., Rice Lake**—HIGH SCHOOL—B.A. 5/25—Bd. Educ., Rice Lake, high school. $1,250,000. Plans deposit $50. Foeller, Schober, Berners, Safford & Jahn, 310 Pine St., Green Bay, archts. CD 7/28.

▲ **Wis., Brookfield**—SCHOOL—B.A. 6/1—Union Free High School, R. 2, Box 1244, Pewaukee, high school. $1,602,000. Plans deposit $100. Grassold-Johnson & Assocs., 734 N. Jefferson St., Milwaukee, 2, Wis., and Perkins & Will, 309 W. Jackson Blvd., Chicago, Ill., archts. CD 11/11.

▲ **Mich., Northville**—INDUSTRIAL THERAPY UNITS—B.A. 6/2—State, A. N. Langius, dir. State Bldg. Dpt., Lewis Cass Bldg., 300 S. Walnut St., Lansing, 2 story, rein.-con., masonry industrial therapy units, (2 bldgs.) Northville State Hospital, $1,500,000. Plans deposit $25, O'Dell, Hewlett & Luckenbach, 950 N. Hunter Blvd., Birmingham, archts. CD 10/25/51.

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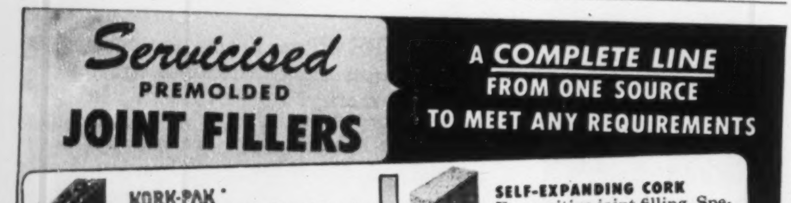

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Mich., Northville—SERVICE—B.A. 6/2—State, A. N. Langius, dir. State Bldg. Dpt., Lewis Cass Bldg., Lansing, 2 story, rein.-con., service bldg., equip. incl. bakery, kitchen, butcher shop, vegetable preparation and cafeteria, Northville State Hospital, $450,000. Plans deposit $25, O'Dell, Hewlett & Luckenbach, 950 N. Hunter Bldg., Birmingham, archts. CD 4/20/53.

Wis., La Crosse—B.A. 6/3—City, City Hall, 1 story, 200x236 ft., brick, stone Mary E. Sawyer Memorial Auditorium, $650,000. Frank J. Fuchs, 115 S. 4 St., La Crosse, Wis., and Ellerbe & Co., 505 First Natl. Bank Bldg., St. Paul, Minn., archts. CD 10/24/51.

SOON LETS CONTRACT—BUILDINGS

▲ **Ill., La Grange**—Y.M.C.A. BLDG.—Young Men's Christian Assn., West Suburban Unit, soon lets contract Y.M.C.A. Bldg. $2,500,000. Ekroth, Martorano & Ekroth, 343 S. Dearborn St., Chicago, Zone 4, archts. CD 5/1/51.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACT

▲ **J. A. Jones Constr. Co.**, 209 W. 4 St., Charlotte, N. C. CA **$5,565,550**, water filtration plant, COLUMBUS, O. City, City Hall, Columbus, O. Bids Apr. 20. CD 4/23, under LB.

INDIANA—State Hy. Comn., State House Annex, Indianapolis,

L. H. Gunsaullus & Sons, Kendallville, Ind., CA, **$893,802**, 3.98 mi. c. conc., 1.88 mi. conc. base wid'n., b. conc. resurf. State Rd. 3, Kendallville, Noble Co. Bids Mar. 18, awarded Apr. 26. CD 3/24, under LB.

Raleigh Burk, 5859 E. 25 St., Indianapolis, Ind., CA, **$289,381**, sewage treatment plant;

Williams Brothers, Clermont, Ind., CA **$137,763** sewers, BROWNSBURG, IND. Town Board, Brownsburg, Ind. Bids Apr. 5, awarded Apr. 24. CD 3/24.

▲ **Wolfe Constr. Co.**, 613 W. Market St., Logansport, Ind., CA, **$1,025,673** sewage plant addn. and new sewers, KOKOMO, IND. City, City Hall, Kokomo, Ind. Awarded May 7. CD 5/11, under LB.

▲ **Simpson Constr. Co.**, 235 N. Ogden Ave., Chicago, Ill., LB, **$799,740**, terminal bldg. addn.;

Arcole Midwest Corp., 3225 Main St., Evanston, Ill., LB, **$1,386,918**, paving and sewers, O'Hare Airport, CHICAGO, ILL. City, City Hall, Chicago, Ill. CD 7/18/51.

WISCONSIN—State Hy. Comn., State Office Bldg., Madison,

rejected bids May 4, 5.825 mi. F-02-5 (12) and F-02-5 (13), Brown and Oconto Counties, LB, **$564,363**; 4.903 mi. F-02-5 (13), Contract 2, Oconto Co., LB, **$518,580**. CD 5/10, under LB.

▲ **WISCONSIN**—State Hy. Comn., State Office Bldg., Madison,

McLean-Astleford Co., 400 W. 78 St., Minneapolis, Minn., LB, **$169,806** Contract 1, 3.478 mi. Proj. S 0157 (6), Washburn Co.;

H. Turner & Son, Boscobel, Wis., LB, **$99,717** Contract 1, 2.162 mi. Proj. T 0380 (3), Crawford Co.;

Schuster Constr. Co., Kenmark, Wis., LB, **$564,363** 5.185 mi. Contract 1, Proj. F-02-5 (12) and F-02-5 (13), Brown and Oconto Counties; LB **$518,580**, Contract 2, 4.903 mi. Proj. F-02-5 (13) Oconto Co.;

Bushman Constr. Co., 4638 J. C. Nichols Parkway, Kansas City, Mo., LB, **$1,063,403**, Contracts 1 and 2, 10.278 mi. roj. F-02-5 (12) and F-02-5 (13) Brown and Oconto Counties;

Vinton Constr. Co., Manitowoc, Wis., LB, **$68,921** Contract 1, 0.394 mi. Proj. T 0730 (2), Outagamie Co.;

Murphy Constr. Co., Black Creek, Wis., LB, **$226,886** 7.873 mi. Proj. F 038-2 (15) and T 0113 (3) Outagamie Co.;

Rein & Shultz, Inc., 119 E. Washington Ave., Madison, Wis., LB, **$69,584**, Contract 1, 0.696 mi. Proj. T 5501 (1), Wood Co.;

Jay W. Craig Co., 1814 N.E. California St., Minneapolis, Minn., LB, **$90,722** Contract 1, 9.4 mi. Proj. T 054 (10), Oneida Co.;

Alexander Constr. Co., 4641 Hiawatha Ave., Minneapolis, Minn., LB, **$95,493**, Contract 1, Proj. T 0110 (3), Richland Co.;

Mathy Constr. Co., 508 Hoeschler Bldg., La Crosse, Wis., LB, **$78,375**, Contract 2, 11.435 mi. Proj. T 0203 (6), Grant Co. Bids May 4. CD 4/15.

▲ **MICHIGAN**—State Hy. Dpt., Stevens T. Mason Bldg., Lansing,

Louis Garavaglia, 24240 Mound Rd., Center Line, Mich. LB **$1,148,103**, est. $1,150,000. Detroit-Toledo Expressway 0.221 mi. of 1 mi. 44 ft. concrete, 23 ft. aggregate pavement on M-56, UI 58-57 C6-U (UI 424 5); BM 58-22, C7-R, BM 58-22, C8-R, BM 58-57, C9-R, Monroe Co.;

Ward & Van Nuck, Inc., 4740 E. Nevada St., Detroit, Mich. LB **$95,533**, est. $95,000. aggregate surf. course 3.979 mi. on county road from Pinnebog West on Kinde Rd., S 32-65 C1 (S 799 1), Huron Co.;

Cooke Contg. Co., 1116 Penobscot Bldg., Detroit, Mich. LB **$189,878**, est. $200,000. 20 ft. bit. aggregate 4.07 mi. 3 sections of county roads, 10.06 mi., CS 77-78 C1 (S 785 1), CS 77-79 C1 (S 59 4), CS 77-80 C1 (S 1223 1), St. Clair Co.;

Hertel-Deyo Co., 5205 Division St. S., Grand Rapids, Mich. LB **$298,512**, est. $300,000. aggregate surf., c. conc. 5.41 mi. on 1.4 mi. of the distance, SS 44-31 C5-R (S 794 1), SS 44-31 C6-U (S 794 1), Lapeer Co. Bids May 5. CD 4/21.

A. J. Smith Contg. Co., 21400 Eight Mile Rd., Detroit, Mich. CA **$127,708**. 34,500 sq. ft. c. conc. paving;

J. J. Barney, 5720 E. Davison St., Detroit, Mich. CA **$233,968**. 4 in. concrete sidewalks, FERNDALE, MICH. City, 21205 Woodward Ave., Ferndale, Mich. Bids Apr. 26. CD 4/14.

(Continued on page 141)

MACON—Fifth St. Paved in 1916. Photos taken in 1922 and in 1953.

HAWKINSVILLE—Main St. Paved in 1919. Photos taken in 1926 and 1953.

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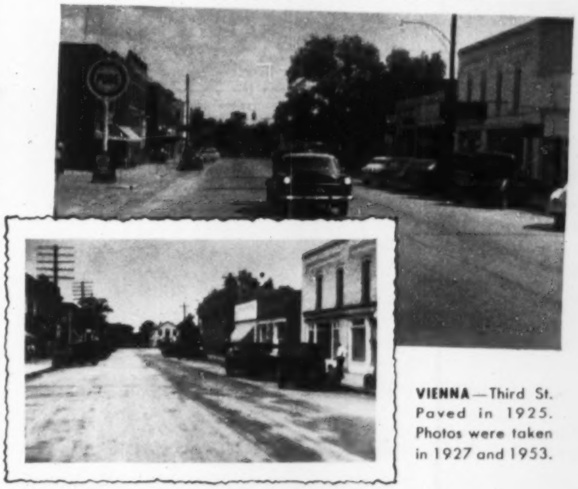
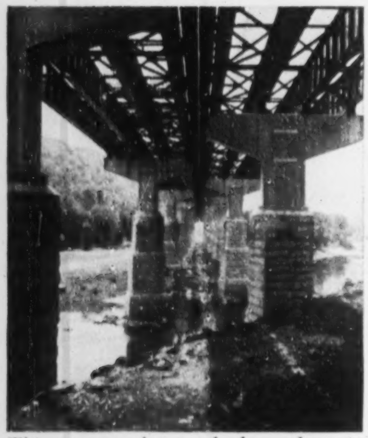


VIENNA—Third St. Paved in 1925. Photos were taken in 1927 and 1953.

ATLANTA—Lakewood Drive. Built in 1916. Photos taken in 1938 and 1953.

Delaware Water Gap Bridge viewed from the air from the Pennsylvania side. Owner: Delaware River Joint Toll Bridge Commission. Prime Contractor: Johnson, Drake and Piper, Inc., New York. Consulting Engineer: J. E. Greiner Co., Baltimore. Steel Fabricator and Erector: Bethlehem Steel Company.

BRIDGE WITH A VIEW



This progress photograph shows the twin spans, constructed on T-type granite-faced piers. Upstream pier faces are wedge-shaped to divert ice and debris.

This is the Delaware Water Gap Bridge, crossing the upper Delaware River between Pennsylvania and New Jersey. Officially opened for traffic in December, 1953, shortly after the above picture was taken, the bridge gives motorists a magnificent view of the famous Delaware Water Gap.

But even more pleasing to travelers is the fact that the new span, with its access highways, eliminates a serious bottleneck and speeds traffic to and from the Pocono Mountain-resort area.

Constructed at a total cost of $8,276,000, the four-lane toll bridge crosses the Delaware at a northwest-southeast angle, 28 degrees to the axis of the river.

Actually, the structure consists of two spans, of simple plate-girder and continuous-girder construction, erected side by side on 31 T-type reinforced-concrete piers. It is just short of one-half mile in length, and contains 5623 tons of structural steel, fabricated and erected by Bethlehem.

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BETHLEHEM STEEL

BETHLEHEM STEEL

(Continued from page 138)

E. H. Wittman Constr. Co., Inc., 2860 Biddle St., Wyandotte, Mich. CA **$466,960,** est. $500,000. indoor outdoor swimming pool, WYANDOTTE, MICH. City, Ford Wager, city clk., Wyandotte, Mich. Bids Apr. 13. CD 4/7.

BUILDINGS

LOW BIDS AND CONTRACTS

John Carpenter, 2021 Carpenter Dr., Cincinnati, O. Owner Builds. **$775,000.** 43 one story, bsmnt., brick, HOMES, off Diehl Rd., south of North Bend Rd. CINCINNATI, O. Arthur Reickert, c/o engrs., archt. James Waid & Assoc., 1721 Dallas St., Cincinnati, O. engrs. Awarded May 7.

Myers Y. Cooper Co., Erie Ave., Cincinnati, O. Own Forces. **$750,000.** 15 one family, 1 and 2 story HOMES, Graves Rd., Indian Hill, CINCINNATI, O. Carl R. Rehring, 6926 Mt. Vernon St., Mariemont, O., engr. Awarded May 4.

▲ **Lang Bros., Inc.,** Lester Rd., Cincinnati, O. Owner Builds. **$1,350,000,** 84 one-family, brick, bsmnt., units HOMES, Sky View Dr., CINCINNATI, O. Nunlist & Frolicher, Traction Bldg., Cincinnati, O., engrs. Awarded May 6.

▲ **Frank Messer & Sons, Inc.,** Paddock Rd., Cincinnati, O., CA **$1,109,600** James Gamble Junior HIGH SCHOOL, Westwood-Northern Blvd., CINCINNATI, O. Bd. Educ., 608 E. McMillan St., Cincinnati, O. Bids Apr. 22, awarded May 3. CD 4/29, under LB.

▲ **Allen Paul,** Oliver Rd., Wyoming, O. Owner Builds. **$2,250,000.** 150 one-family 1 story, bsmnt. brick HOMES, Clovernoll Dr., CINCINNATI, O. Joseph Allen, 4638 Glenway Ave Cincinnati, O. Awarded May 5.

Northland Builders, Inc., Lehigh Ave., Cincinnati, O. Owner Builds. **$315,000.** 15 one-family, brick, bsmnt. HOMES, Rosetree Lane, CINCINNATI, O. I. Vollman, 1947 Avonlea St., Cincinnati, O. engr. Awarded May 4.

▲ **George H. Rutherford Co.,** 2725 Prospect Ave., Cleveland 15, O., CA **$1,250,000.** 1, 2 and 3 story, masonry HOSPITAL, addn., incl. operating rooms and facilities for 40 more beds, CLEVELAND, O. Huron Road Hospital, 13951 Terrace Rd., East Cleveland, O., George S. Rider Co., Terminal Bldg., Cleveland 13, O. archt. Awarded May 6.

▲ **Joseph Skilken & Co.,** 44 E Broad St., Columbus, O., CA **$2,446,600,** general contract arena sect. of Ohio State University FIELD HOUSE, COLUMBUS, O. State of Ohio, State Office Bldg., S. Front St., Columbus O. CD 1/13/53.

▲ **Edward Rose,** 14900 Linwood St., Detroit 38, Mich Owner Builds. **$5,500,000.** 500 single brick HOUSES DAYTON, O.

Buckey Bros., Inc., Newark O., CA Approx. **$500,00** 1 story, 133x200 ft. Benjamin Franklin Junior HIG SCHOOL, S. 2nd St. and Beacon Rd., NEWARK, O. Bd. Educ., Newark, O. Joseph Baker & Assoc., Newark, O., archts. CD 5/15/51.

▲ **F. A. Wilhelm,** 3914 Prospect St., Indianapolis, Ind., CA, **$4,000,000.** 1 story, irregular 945,499 sq. ft., brick, concrete, structural steel MANUFACTURING PLANT, incl. four building addns. and foundry bldg., INDIANAPOLIS, IND. International Harvester Co., Brookville Rd., Indianapolis, Ind. Awarded Apr. 26. CD 3/23.

Harry E. Berke, 2216½ N. Meridian St., Indianapolis, Ind., CA, **$460,000,** 1 story, irregular brick, concrete, structural steel, WAREHOUSE and OFFICE, INDIANAPOLIS, IND. Westinghouse Electric Co., Stadium Ave. and 16 St., Indianapolis, Ind. Awarded Apr. 22.

Repp & Mundt, Columbus, Ind., CA, **$410,000.** Elwood Haynes SCHOOL, KOKOMO, IND. Kokomo School City, Kokomo Ind. Bids Mar. 15, awarded May 6. CD 3/26, under LB.

W. R. Dunkin & Son, Anderson, Ind., CA, **$599,876,** SCHOOL and GYMNASIUM, YORKTOWN, IND. Mt. Pleasant Twp. School System, Yorktown, Ind. Bids Apr. 30, awarded May 6. CD 4/8.

Carebuilt Corp., 1643 Ellinwood St., Desplaines, Ill. Own Forces, **$350,000,** 15 HOMES, near CHICAGO, ILL.

Lee Constr. Co., 127 N. Dearborn St., Chicago, Ill., CA, **$906,112,** BUS TERMINAL and GARAGE, CHICAGO, ILL. Chicago Transit Auth., Armstrong and Elston St., Chicago, Ill. Battey & Childs, 231 S. La Salle St., Chicago 4, Ill., engrs. Awarded May 3. CD 11/12/52.

▲ **Banker Builders, Inc.,** 4906 Milwaukee St., Chicago, Ill., Own Forces, **$2,600,000.** 150 HOMES, in northwest suburbs of CHICAGO, ILL. Dewey & Pavlovich, 4804 N. Kedzie St., Chicago, Ill., archts.

▲ **United Constr. Co.,** 18112 Torrence Ave., Lansing, Ill., Own Forces, **$2,100,000,** 200 HOMES, DOLTON, ILL.

▲ **Homecraft Builders Corp.,** 420 Forest Ave., Downers Grove, Ill., Own Forces, **$2,000,000.** 125 HOMES, DOWNERS GROVE, ILL.

W. H. Lyman Constr. Co., 134 S. La Salle St., Chicago 3, Ill., CA, **$615,000,** est. $600,000 DIAL EXCHANGE BLDG., ELGIN, ILL. Illinois Bell Telephone Co., 206 W. Washington St., Chicago 6, Ill. Awarded May 3. CD 2/26.

S. B. Davis, 531 York St., Elmhurst, Ill., Own Forces, **$800,000.** 40 HOMES near ELMHURST, ILL.

Malott & McLane Constr. Co., 9600 Central Park Ave., Evergreen Park, Ill., Own Forces, **$600,000.** 30 HOMES, EVERGREEN PARK, ILL.

Clem B. Mulholland, Inc., 2156 W. 95 St., Evergreen Park, Ill., Own Forces, **$850,000,** 45 HOMES, EVERGREEN PARK, ILL.

Maritime Constr. Co., 7433 Constance St., Chicago, Ill., Own Forces, **$600,000,** 50 HOMES, HIGHLAND PARK, ILL.

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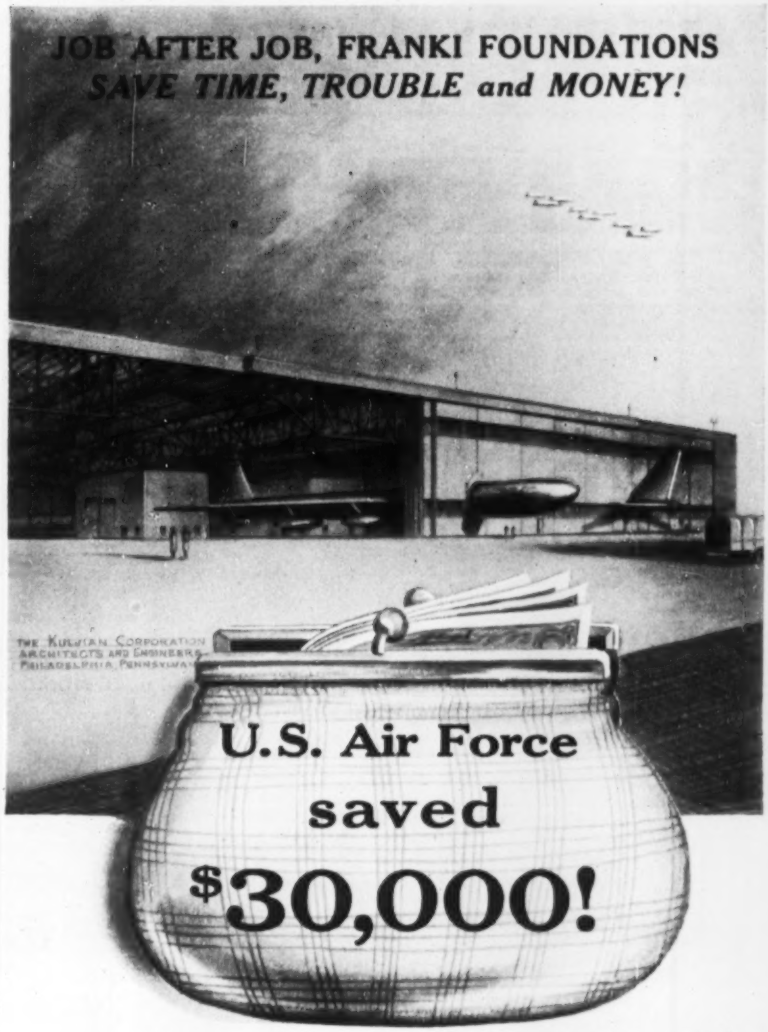

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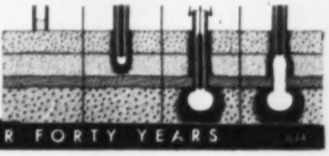

FIRM FOUNDATIONS FOR OVER FORTY YEARS

Wm. F. Schweitzer, 2207 Dodge St., Evanston, Ill., CA, **$628,500**, HIGH SCHOOL northeast and southwest addns., HINSDALE, ILL. School District No. 86, 55 and Grant Sts., Hinsdale, Ill. Bids Apr. 5, awarded Apr. 28. CD 4/19, under LB.

B. Stromberg Constr. Co., 5405 W. Madison St., Chicago, Ill., Own Forces, **$800,000**, 40 HOMES, MORTON GROVE, ILL.

▲ **Bills Realty Co.**, Box 116, Northbrook, Ill., Own Forces, **$2,500,000**. 150 HOMES, NORTHBROOK, ILL.

Oaklawn Constr. Co., 5318 W. 95 St., Oaklawn, Ill. Own Forces, **$875,000**, 75 HOMES, OAKLAWN, ILL.

Collins Builders, 5231 Lincoln Ave., Skokie, Ill., Own Forces, **$800,000**, 40 HOMES, SKOKIE, ILL.

▲ **Gilbert Engineers**, 161 North Victoria St., St. Paul Minn., CA, **$5,000,000**, general contract HOUSING and SHOPPING CENTER, incl. 200 dwellings and shopping center and grade and Junior High School, HUDSON, WIS. Hudson Development Co., C. A. Ward, pres., Hudson, Wis. (**Correction**—contractors name). CD 5/4, under CA.

▲ **Hunzinger Constr. Co.**, 4577 N. 124 St., Butler, Wis., CA, 7 story, 52x321 ft. HOSPITAL and 2 45x89 ft. LAUNDRY and DORMITORY, MILWAUKEE, WIS. St. Francis Hospital Corp., 3249 S. 18 St., Milwaukee 15, Wis. Bids Apr. 2. CD 4/8, under LB.

'. **Becker Constr. Co.**, 7701 W. Blue Mound Rd., Milwaukee 12, Wis., CA, Total est, **$23,600,000** general contract third unit of POWER PLANT, town of Oak Creek, MILWAUKEE, WIS. Wisconsin Electric Power Co., 231 W. Michigan St., Milwaukee 3, Wis. Bids Mar. 23. CD 3/16.

Edwin H. Meyer Constr. Co., Neenah, Wis., CA, **$300,000**. MILL extension, PORT EDWARDS, WIS. Nekoosa-Edwards Paper Co., Port Edwards, Wis.

▲ **T. S. Willis**, 326 Hayes Block, Janesville, Wis., CA, Total est. over **$3,500,000**. general contract, 2 story, 1004x646 ft., steel, concrete, auto body PLANT addn., JANESVILLE, WIS. Fisher Body Division, General Motors Corp., General Motors Bldg., Detroit, Mich. Albert Kahn Associated Architects & Engineers, Inc., 345 New Center Bldg., Detroit, Mich., archt. CD 2/3.

Precour Constr. Co., Kenosha, Wis., CA, **$654,540**, High SCHOOL addns., incl. gymnasium, PORT WASHINGTON, Wis. Bd. Educ., Port Washington, Wis. Bids Apr. 2. CD 4/12, under LB.

Pfeifer Constr. Co., 9020 W. Orchard St., Milwaukee 14, Wis., CA, **$302,000**, YOUTH CENTER and CLUB HOUSE, WEST ALLIS, WIS. Young Men's Christian Assn., 7007 W. National Ave. Milwaukee 14, Wis. Maynard Meyer & Assoc., 424 E. Wells St., Milwaukee 2, Wis., archts.

Proksch Constr. Co., Iron River, Mich. CA **$391,863**. 2 story HOSPITAL, MARQUETTE, MICH. St. Luke's Hospital, Miss Audrey Shade, supt., Marquette, Mich. Harry W. Gjelsteen, 113 Sixth Ave., Menominee, Mich., archt. CD 5/13/53.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION

† **Minn., Minneapolis**—SECURITY FENCING—B.A. 5/25—U. S. Eng., 1709 Jackson St., Omaha, Neb., security fencing at Minneapolis-St. Paul International Airport, Inv. 25-066-54-93.

† **N. D., Velva**—B.A. 5/26—U. S. Eng., 1709 Jackson St., Omaha, Neb., water supply treatment facilities, Inv. 25-066-54-81.

† **S. D., Rapid City**—MAGAZINE—B.A. 5/26—U. S. Eng., 1709 Jackson St., Omaha, Neb., magazine above ground, Ellsworth Air Force Base, Inv. 25-066-54-98. CD 11/12/51.

† **Mo., St. Louis**—GAS DISTRIBUTION SYSTEM—B.A. 5/27—U. S. Eng., 601 Davidson Bldg., 10 E. 17 St., Kansas City, Mo., underground gas distr. sys., lines either c.i. or steel coated and wrapped with cathodic protection installed in place, move regulators from basements to second floor in 10 bldgs., etc., St. Louis Ordnance Plant. ENG-23-028-54-169. Russell & Axon, 408 Olive St., St. Louis, Zone 2, engrs.-archts. CD 10/19, under Public Buildings.

Mo., St. Louis—B.A. 6/8—City, c/o Frank J. McDevitt, pres. Bd. P. Service, 304 City Hall, Zone 3, constr. Glaise Creek foul water sewer and revisions to foul water interceptors of River des Peres foul water sewerage sys. CD 3/22/45.

▲† **Tex., Kelly Air Force Base**—WAREHOUSE—B.A. 6/10—U. S. Eng., Box 1229, Galveston, Schedule 1, 720,000 sq. ft. concrete frame, masonry AMC warehouse, drilled footings, concrete floor slab $3,000,000-$5,500,000. Schedule 2, outside utilities, sewers, water grading, drainage ditches, paving, gas and electric distr. lines, $475,000, Inv. No. ENG-41-243-54-36. Extended date. CD 5/7.

† **North Dakota**—B.A. 6/17—U. S. Eng., Riverdale, paving 6 mi. relocated U. S. Hy. No. 83, near Coleharbor, Inv. 32-015-54-53. CD 4/27.

BIDS ASKED—BUILDINGS

† **Arkansas**—INFORMATION CENTER—B.A. 5/25—U. S. Eng., 300 Broadway, Little Rock, information center at Bull Shoals Dam, White River, Serial No. CIVENG-03-050-54-47, Extended date. CD 5/3.

▲ **Mo., St. Louis**—HOSPITAL—B.A. 5/25—Evangelical Deaconess Society of St. Louis, c/o Deaconess Hospital, Rev. Dr. Elmer H. Hoefer, pres., 6150 Oakland Ave., Zone 10, 4 story, bsmt., 130x182 ft., brick, rein.-con. hospital for mentally and chronically ill patients and memorial chapel. $2,000,000, Jamieson, Spearl, Hammond & Grolock, 1696 Arcade Bldg., 812 Olive St., Zone 1, assoc. archts. CD 6/5.

▲ **Tex., Dallas**—CITY HALL—B.A. 5/31—City, City Hall, Main and Harwood Sts., 5 story bsmnt., 155x200 ft. limestone, granite, marble, structural steel, etc. City Hall, to include fdn. for future five addnl. stories. $2,500,000. Plans deposit $75. Mark Lemmon, Thomas Bldg., and Smith & Mills, Mercantile Bank Bldg., archts. Zumwalt & Vinther, Mercantile Security Bldg., and Mullen & Powell, Reserve Loan Life Bldg., engrs. CD 7/14.

Tex., Galveston—HOUSING—B.A. 6/3—Galveston Housing Auth., City Hall, Tex. 17-6, Housing Proj. for Negroes, 104 units, 14 two-story 26x107 ft. each Type A bldgs., appurtenances, brick exterior, concrete pier and beam fdn., $600,000. Plans deposit $25. Rapp, Price & Stafford, 417 Stewart Bldg., Galveston, and Arne G. Engberg, 2130 Welch St., Houston, archts. B. Johnson & Assocs., 4926 Travis St., and Walter P. Moore, 2 Pinedale St., Houston, engrs. CD 2/18, under LB.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **IOWA**—State Hy. Comn., Ames,

Booth & Olson, Inc., 529 Insurance Exchange Bldg., Sioux City, Ia., LB, **$104,362**, paving 0.496 mi. FN-26 (2), Adams Co.;

R. B. Burch, Inc., 249 33 St. Dr. S.E., Cedar Rapids, Ia., LB **$110,073**, paving 0.975 mi. FN-262, Buchanan Co.;

Quad City Constr. Co., 644 25 Ave., Rock Island, Ill., LB, **$134,371**, paving 0.535 mi. U-414 (5), Des Moines Co.;

Hallett Constr. Co., Crosby, Minn., LB, **$208,175**, pavement wid'n., resurf. 7.911 mi. P-164, Black Hawk Co.; LB, **$159,498**, 5.07 mi. P-334, Bremer Co.;

Strother & Rhiem, Inc., Eldon, Ia., LB, **$60,590**, grading 2.917 mi. S-2229 (1), Allamakee Co.; LB, **$64,360**, 4.66 mi. S-235 (1), Allamakee Co.;

E. M. Duesenberg, Inc., Clear Lake, Ia., LB, **$87,053**, 5.844 mi. F-968 (1), Special, Cerro Gordo Co.;

Cameron-Joyce & Co., Keokuk, Ia., LB, **$493,792**, stab. base, bit. 12.794 mi. P-1058, Benton and Iowa Counties;

Highway Surfacers, Inc., New Hampton, Ia., LB, **$252,425**. stab. base and bit. 12.44 mi. FN-611, Fayette Co.;

Norris Constr. Co., Ottumwa, Ia., LB, **$171,916**. stab. base, bit. 5.742 mi. FN-352, Henry Co.;

Everds Bros., Algona, Ia., LB, **$78,061**, stab. base and bit. 11.353 mi. S-748 (3), Kossuth Co.;

Western Eng. Co., Harlan, Ia., LB, **$74,973**, stab. base and bit. 4.976 mi. T-645, Plymouth Co.; LB **$111,487**, 6.953 mi. S-2375 (1), all Plymouth Co.;

Gene McClain, Allerton, Ia., LB, **$124,417**, 4.776 mi. P-772, Van Buren Co. Bids May 4. CD 4/21.

E. M. Stites, Dexter, Mo. LB **$109,833**. sewage treatment, all appurtenances, CHAFFEE, MO. City, c/o Fred Thornton, mayor, Chaffee, Mo. Bids May 3. CD 4/21.

St. Louis County Bridge & Grading Co., 7929 Alabama Ave., St. Louis 11, Mo. LB **$179,019**, est. $240,000. wid'n. access roadways in River des Peres drainage sys. from Morganford Rd. to Chippewa St., ST. LOUIS, MO. City, c/o Franck J. McDevitt, pres. Bd. P. Service, 304 City Hall, St. Louis 3, Mo. Bids May 4. CD 4/6.

KANSAS—State Hy. Comn., El Dorado,

Inland Constr. Co., 3867 Leavenworth St., Omaha, Neb. CA **$211,174**. Alt. No. 1 base course, dense graded surf. course 5.02 mi., Proj. 87 S 122 (4), Sedgwick Co. Bids Apr. 15. CD 3/31.

KANSAS—State Hy. Comn., Garden City,

Dwight Haworth, Ottawa, Kan. CA **$102,455**. c. conc. 0.741 mi. Proj. 50S-28 U 050-2 (4), Part I, Finney Co. Bids Apr. 21. CD 4/8.

KANSAS—State Hy. Comn., Norton,

D. G. Hansen, Logan, Kan. CA **$162,972**. dense graded surf. 18.631 mi. Proj. 36-20 K 3286 (1), Decatur Co. Bids Apr. 23. CD 4/8.

KANSAS—State Hy. Comn., Kansas City,

J. A. Tobin Constr. Co., 3700 Rainbow Blvd., Kansas City, Kan. CA **$118,051**. c. conc. 0.167 mi., Proj. 92-52 U 088-2 (2), Leavenworth Co. Bids Apr. 29. CD 4/16.

▲† **Bushman Constr. Co.**, 4635 Wyandotte St., Kansas City 12, Mo. LB **$3,680,278**, est. $4,247,984. airfield paving and drainage, Forbes Air Force Base, Inv. 23-028-54-60, TOPEKA, KAN. U. S. Eng., 601 Davidson Bldg., Kansas City 8, Mo. Bids May 4. CD 4/14.

▲† **Western Contg. Corp.**, 400 Benson Bldg., Sioux City, Ia. CA, **$2,731,529** apron pavement and drainage, FY-54, Forbes Air Force Base, Inv. 23-028-54-58, TOPEKA, KAN. U. S. Eng., 601 Davidson Bldg., Kansas City, Mo. CD 5/3, under LB.

Utilities Contractors, 610 N. Main St., Wichita, Kan. CA, **$927,430**. supplementary sewer to intercept sewer, WICHITA, KAN. City, Wichita, Kan. Black & Veatch, 4706 Broadway, Kansas City, Mo., engrs. Bids Apr. 27. CD 4/22.

OKLAHOMA—State Hy. Dpt., Capitol, Oklahoma City, Zone 5,

Gregg Constr. Co., Henryetta, Okla., CA **$77,164**, est. $86,637, four concrete culverts, S.H. 63, Muse, LeFlore Co.;

Lyles & Buckner, Surety Bldg., Muskogee, Okla., CA **$466,240**, est. $501,210, four bridges over Verdigris River, S.H. 51, Coweta, Wagoner Co.; CA **$136,770**, est. $212,771, bridge over Gar Creek, S.H. 51, Coweta, Wagoner Co. Grand total $680,174. Bids May 4. CD 4/28.

▲ **OKLAHOMA**—State Hy. Dpt., Capitol, Oklahoma City, Zone 5,

Broce Constr. Co., Woodward, Okla., CA **$95,981**, est. $99,205, stabil. base, single bit. surf. 7.48 mi., Helena, Alfalfa Co.;

Boecking Constr. Co., 2810 N. McArthur St., Oklahoma City, Okla., CA **$76,635**, est. $87,793, rock asph. resurf. 1.15 mi., Hy. 22, Tishomingo Co., Johnston Co.;

Public Constr. Co., Barnes Bldg., Muskogee, Okla., CA **$63,266**, est. $76,660, stabil. base double bit. surf. 3.69 mi. Co. Rd., Cameron, LeFlore Co.;

Blackburn Constr. Co., 1916 N. Broadway, Oklahoma City, Okla., CA **$132,256**, est. $155,662, traffic bound surf. 6.05 mi. S.H. 63, at Muse, LeFlore Co.;

Cohenour Constr. Co., Ardmore, Okla., CA **$67,925**, est. $82,606, traffic bound surf. 2.73 mi. S.H. 63 at Muse, LeFlore Co.;

Smith Bros., Noble, Okla., CA **$182,200**, est. $223,744, stabil. base and rock asph. surf. 7.85 mi., S.H. 199, Madill, Marshall Co.; CA **$60,063**, est. $70,324, stabil. base, rock asph. surf. 2.39 mi., S.H. 199, Madill, Marshall Co.;

Gaines & Son, Miami, Okla., CA **$62,458**, est. $67,884, stabil. base, double bit. surf. S.H. 69-A, Adair, Mayes Co. Grand total $740,784. Bids May 4. CD 4/28.

▲† **T. C. Bateson Constr. Co.**, Box 7305, Live Field Station, Dallas, Tex., CA **$1,843,597**. A/C maintenance hangar and supporting facilities, Altus Air Force Base, Inv. No. ENG-34-066-54-55, ALTUS, OKLA. U. S. Eng., Box 61, Tulsa 2, Okla. Bids Apr. 15. CD 4/21, under LB.

▲† **T. C. Bateson Constr. Co.**, Box 7305, Live Field Station, Dallas, Tex., CA **$1,961,507**, A/C maintenance hangar and supporting facilities, Ardmore Air Force Base, Inv. No. ENG-34-066-54-55, ARDMORE, OKLA. U. S. Eng., Box 61, Tulsa 2, Okla. Bids Apr. 15. CD 4/21, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

M. Shapiro & Sons, Inc., 400 Alta Dena Dr., University City 5, Mo. Owner Builds. **$643,236**. fifty-nine 1 story, brick RESIDENCES, 25x58 ft. GARAGES, Dana, Steelamac and Kit Drs., and Jonmar and Kenstan Courts, AFFTON (ST. LOUIS 23 P.O.), MO.

Gene Vescovo, 534 Linda Lane, Affton 23, Mo. Owner Builds. **$431,568**. fifty-four 1 story, frame 24x37 ft. RESIDENCES, Anchor, Port, Starboard and Harbor Drs., AFFTON (ST. LOUIS 23 P.O.), MO.

Joseph H. Vatterott, 1500 S. Florissant Rd., Florissant, Mo. Owner Builds. **$600,000**. 70 addnl. brick RESIDENCES, Duchesne Hills, 4 blocks north of intersection of U.S. No. 66 and Florissant Rd., FLORISSANT, MO.

▲ **Norman Development Co.**, Joplin, Mo. Owner Builds. **$3,000,000**. SHOPING CENTER, JOPLIN, MO. Hare & Hare, 114 W. 10 St., Kansas City, Mo., landscape and site engr. Crute-O'Bryan, Joplin, Mo., archts.

John B. Gutmann Constr. Co., 1301 S. Vandeventer Ave., St. Louis 10, Mo. CA Est. **$750,000**. 1 story, brick, steel, concrete, masonry WAREHOUSE and OFFICE, 100,000 sq. ft. floor space, incl. 8,000 sq. ft. refrigerated area, railroad spur, loading docks, Page Ave. and Walton Rd., OVERLAND (ST. LOUIS 14 P.O.), MO. Fred P. Rapp, 1450 S. Vandeventer Ave., St. Louis 10, Mo. Bids Apr. 7. CD 4/5.

Contemporary Development Co., 6242 Natural Bridge Rd., St. Louis 20, Mo. Owner Builds. **$500,000**. 71 concrete RESIDENCES, Pine Meadows subdivision on south side of U. S. No. 66, ½ mi. west of West Florissant Ave., ST. LOUIS COUNTY, MO.

Seifert Brothers Constr. Co. c/o Roger R. Hammer, 1447 McLaran Ave., St. Louis 15, Mo. Owner Builds. **$500,000**. 100 brick, concrete ranch type RESIDENCES, on 60-acre tract Sunset Hills Estates adjacent to Gravois and Musick Rds., ST. LOUIS COUNTY, MO.

Swan Constr. Co., 8615 Laclede Station Rd., Affton 23, Mo. LB **$410,000**, est. $300,000. 1 story brick, steel, concrete, irregular shape 136x244 ft. overall DORMITORY, St. Louis Training School for Feeble Minded at Bellefontaine and Hall Rds., ST. LOUIS COUNTY, MO. State, Dpt. P. Health & Welfare, W. Ed. Jameson, dir., Jefferson City, Mo. Bids Apr. 27. CD 4/6.

▲ **Inwood Constr. Co.**, 5151 Northwest Hy., Dallas, Tex., CA, **$1,725,000**. 6 story bsmnt. 120x400 ft., terra cotta OFFICE, rein.-con. fdn., escalators, etc. AMARILLO, TEX. Petroleum Building, Inc., 310 W. 6 St., Amarillo, Tex., Bids May 18. CD 4/27.

▲ **McCann Constr. Co.**, 1813 E. Lancaster St., Fort Worth, Tex., LB, **$1,166,333**. Paschall Southside HIGH SCHOOL, FORT WORTH, TEX. Fort Worth Independent School Dist., 409 E. Weatherford St., Fort Worth, Tex. Bids May 5. CD 4/1.

O. T. Chapman & N. O. Finch, Box 37, Hutchins, Tex., LB, **$449,515**. JUNIOR HIGH SCHOOL, GRAND PRAIRIE, TEX. Grand Prairie Independent School Dist., Grand Prairie, Tex. Bids May 1. CD 3/3, under LB.

▲ **W. S. Bellows Constr. Co.**, Box 2132, Houston, Tex., LB Approx. **$4,500,000**. 24 story BANK and OFFICE, HOUSTON, TEX. Second National Bank of Houston, 800 Main St., Houston, Tex. W. E. Simpson Co., 945 Milam Bldg., San Antonio, fdn. engr. Bids May 4. CD 5/3.

FAR WEST

BIDS ASKED—HEAVY CONSTRUCTION

† **Oregon**—B.A. 6/2—U. S. Eng., 628 Pittock Block, Portland, grading, draining approx. 5 mi. double track Union Pacific R.R. and approx. 3.6 mi. U.S. Hy. 30, fabricating and installing wood water tank for The Dalles Dam Proj., Wasco and Sherman Counties, Serial No. CIVENG-35-026-54-141. CD 12/23.

† **Ariz., Chandler**—LAUNDRY—B.A. 6/3—U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif., laundry

(Continued on page 144)

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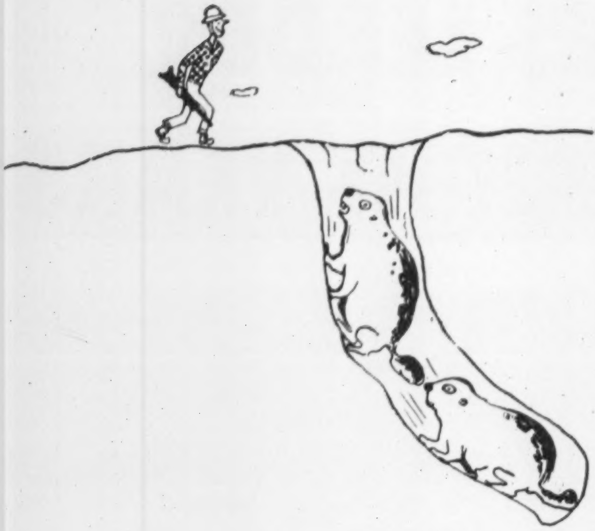
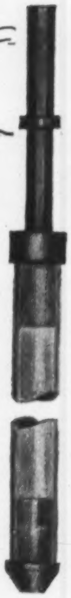
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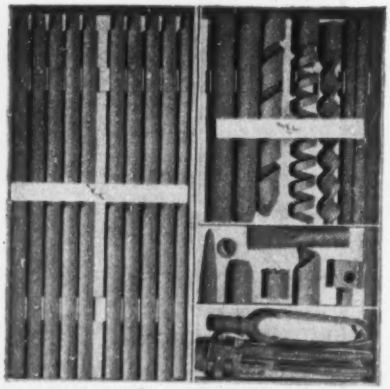
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(Continued from page 142)

bldg., William, Air Force Base, ENG-04-353-54-83. $200,000. CD 5/28/51.

† **Oregon**—B.A. 6/3—U. S. Eng., 628 Pittock Block, Portland, Zone 5, oil mat wearing surf. on Market Rd. No. 36 and County Rd. No. 360 near the Town of Lowell, CIVENG-35-026-54-128.

† **Idaho**—B.A. 6/15—Bureau Reclamation, Dpt. Interior, Rupert, pumping sub-stations for Group 2 wells, North Side Pumping Division, Minidoka Project, Spec. No. 100C-183.

† **Oregon**—B.A. 6/15—U. S. Eng., 628 Pittock Block, Portland, Zone 5, concrete piers and abutments and fabrication and erection deck girder spans, appurtenances for railroad bridge at Fulton Canyon approx. 17 mi. east of The Dalles, Ore., on relocation of Union Pacific R.R. Co. main line, Serial No. CIVENG-35-026-54-139. CD 12/23, under Earthwork, etc.

† **Utah**—B.A. 6/15—Bureau Reclamation, Dpt. Interior, Ogden, furnishing labor and materials for earthwork, concrete pipe lines and structures, incl. bifurcation structure, Station 8 plus 36.82 to Station 935 plus 05, Davis Aqueduct, Weber Basin Proj., south of Ogden, Davis Co., Spec. DC 4171. CD 8/4/52.

† **Oregon**—B.A. 6/22—U. S. Eng., 628 Pittock Block, Portland, Zone 5, procurement of intake hydraulic equipment for The Dalles Dam Powerhouse, Serial No. CIVENG-35-026-54-138. CD 12/23.

BIDS ASKED—BUILDINGS

Calif., **Palmdale**—HOSPITAL—B.A. 6/2—Antelope Valley Hospital District, Lancaster, 41-bed hospital. $500,000. Merrill W. Baird, Bank of American Bldg., Glendale, archts. CD 5/4, under LB.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

IDAHO—State Hy. Dpt., Boise,
Germer, Abbott, Waldron, Tremonton, Utah, LB **$212,985,** concrete bridge and surf. 11.7 mi. Murphy-Brunear Rd., Owyhee Co.;
Nelson & Deppe, 3501 Mountain View Dr., Boise, Idaho, LB, **$207,332,** 12 mi. Murphy-Brunear Rd., Owyhee Co. Bids May 4.

IDAHO—State Hy. Dpt., Boise,
Le Grand Johnson, Logan, Utah, LB, **$736,870** surf. 40 mi. U. S. 20 and U. S. 26, Bingham and Butte Counties. Bids May 4. CD 4/19.
Turner Constr. Co., Heber City, Utah, CA **$134,891.** sewage treatment plant, HEBER, UTAH, City, Heber City, Utah. Hugo Price, 455 E. Third South St., Provo, Utah, and **Neff** Eng., 2500 Evergreen Ave., Salt Lake City, Utah, engrs. Bids Apr. 22.
WASHINGTON—State Hy. Comn., Olympia,
P. Jarvis, Inc., 1070 W. Ewing St., Seattle, Wash., LB, **$450,424,** bridge, altering existing bridge and lighting, etc. 0.406 mi. Primary State Hy. 2 over Wenatchee River, F.A.P.F. 028-1 (8) Chelan Co. Bids May 4. CD 4/21.
WASHINGTON—State Hy. Comn., Olympia,
Asphalt Paving & Engineering Co., P. O. Box 106, South Tacoma, Wash., LB, **$113,373,** b. conc. 9.05 mi. Primary State Hy. No. 9, Grays Harbor Co.;
Pieler Constr. Co., Shafer Bldg., Seattle 1, Wash., LB, **$88,340,** 2.235 mi. Primary State Hy. 9, Clallam Co.;
F. R. Hewett, Parkwater, Wash., LB, **$138,618.** 12.599 mi. F.A.S. NOS. S-1002 (4) and S-1004 (2), Grant Co.;
Lone Pine Paving Co., Yakima, Wash., LB, $62,018, 13 mi. Primary State Hy. No. 5, F.A.P. F-016-2 (4), Yakima Co.;
Boek Brothers, Hoquiam, Wash., LB, **$488,622** 3.827 mi. State Hy. 13, F-006-1 (6), Grays Harbor Co. Bids May 4. CD 4/21.
▲ **Engineers Limited Pipe Line Co.,** Securities Bldg., Seattle 1, Wash., CA, **$2,000,000.** 31 mi. 16 and 20 in. steel oil pipe line from Sumas to Ferndale, Whatcom Co., WASHINGTON. Trans Mountain Oil Pipe Line Co., Vancouver, B. C.
Veale Constr. Co., 2 and Cherry Bldg., Seattle 4, Wash., LB, **$204,000,** est. $230,000 North End swimming pool, SEATTLE, WASH. Park Bd., 100 Dexter Ave., Seattle, Wash. Bids May 4. CD 4/7.

BUILDINGS

LOW BIDS AND CONTRACTS

C. B. Lauch, Box 2559, Boise, Idaho, LB, **$327,453,** 1 and 2 story, rein.-con. HOSPITAL, BONNERS FERRY, IDAHO. Boundary Co., Court House, Bonners Ferry, Idaho. Bids May 3.
Brazier Constr. Co., 409 Pontius St., Seattle, Wash., CA, **$377,318** 83 portable CLASSROOM BLDGS., SEATTLE, WASH. School District No. 1, 815 4 Ave. N., Seattle, Wash. CD 3/15.
▲ **Steed Brothers,** Box 350, Alhambra, Calif., LB **$2,886,000,** New San Gabriel High SCHOOL, ALHAMBRA, CALIF. Alhambra City High School District, 601 N. Garfield Ave., Alhambra, Calif. Bids May 4. CD 4/14.
▲ **Barrett Constr. Co.,** 918 Harrison St., San Francisco, Calif., LB, **$1,269,939,** HOSPITAL addn., BAKERSFIELD, CALIF. Mercy Hospital, 2215 Truxton Ave., Bakersfield, Calif. Bids Apr. 30. CD 3/23.
Brea Homes, Inc., 1763 E. 4 St., Los Angeles, Calif., Owner Builds, **$451,800,** 36 frame, stucco DWELLINGS, 9 St., POMONA, CALIF.
Bershon Realty Co., 11231 W. Pico Blvd., Los Angeles, Owner Builds, **$331,200,** 36 frame, stucco DWELLINGS, Wild Rose and Palmgrove Aves., POMONA, CALIF.
▲ **F. E. Young Constr. Co.,** 2141 Main St., San Diego, Calif., CA, **$1,182,000,** George W. Marston Junior High SCHOOL, SAN DIEGO, CALIF. San Diego Unified School District, Park and El Cajon Blvds., San Diego, Calif. CD 8/4.

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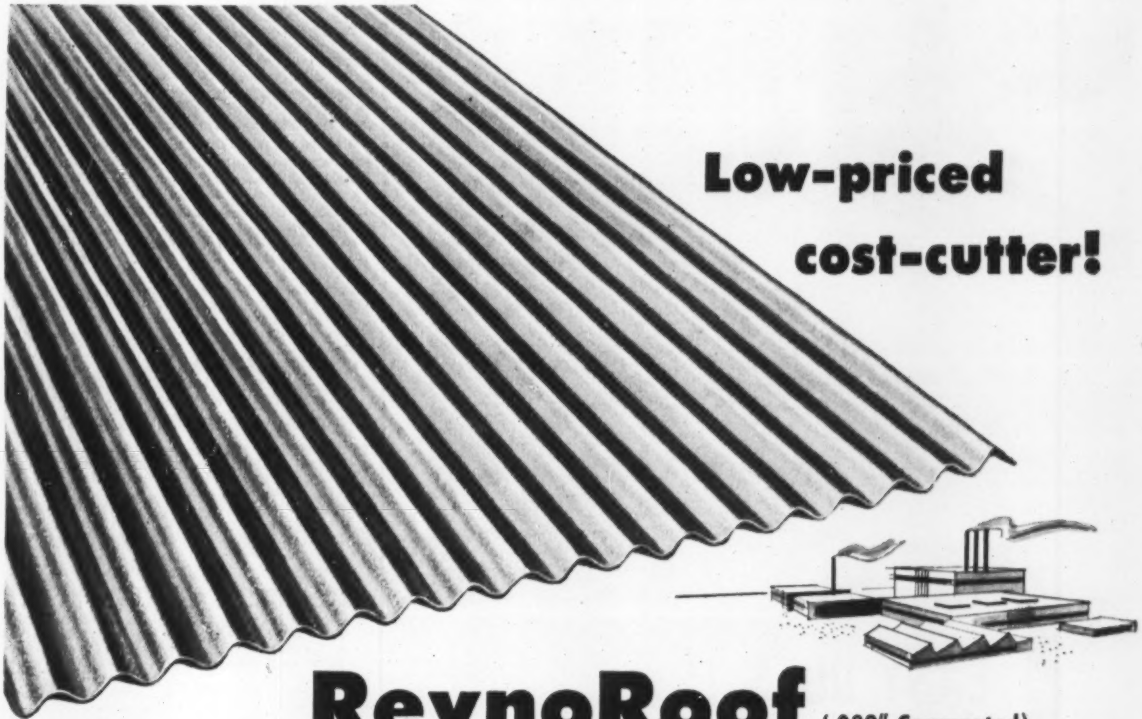

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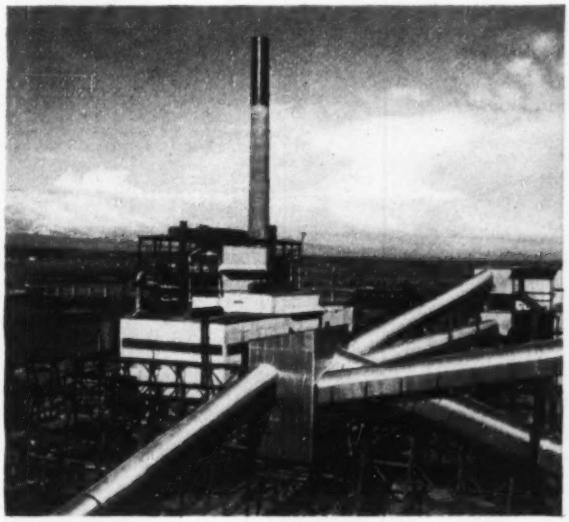

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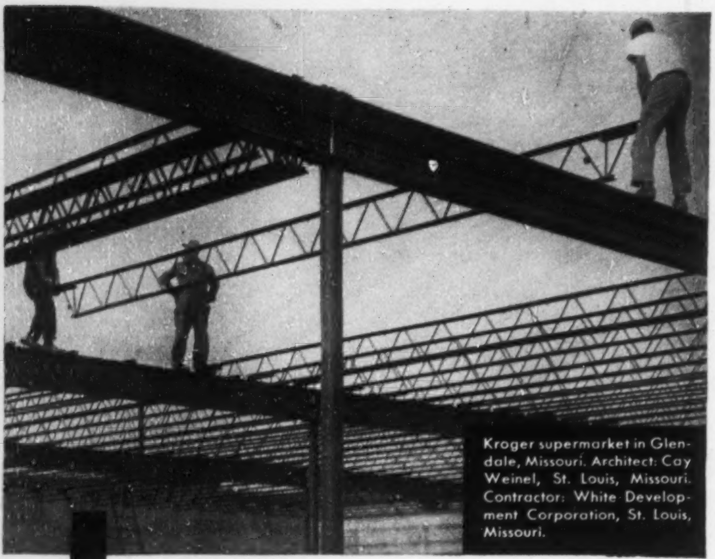

Kroger supermarket in Glendale, Missouri. Architect: Cay Weinel, St. Louis, Missouri. Contractor: White Development Corporation, St. Louis, Missouri.

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(Continued from page 144)

McDonald Brothers, 2620 N. Rosemead Blvd., El Monte, Calif., CA, **$404,800**, 54 frame stucco DWELLINGS, In tract 16999, WEST COVINA, CALIF. Marvin Villa Co., 2620 N. Rosemead Blvd., El Monte, Calif.

CANADA

BIDS ASKED—HEAVY CONSTRUCTION

Alta., McMurray—RUNWAY, etc.—B.A. 5/25—Dpt. Transport, Ottawa, Ont., hardsurface runway taxi and parking areas at airport. $800,000. Plans deposit $25.

N. B., Camp Georgetown—CLEARING, etc.—B.A. 5/25—Defence Constr. Ltd., 56 Lyon St., Ottawa, Ont. clearing, grubbing and burning as called on No. 1 Priority Training Area. $100,000. Plans deposit $100. CD 8/1/52, under N. B., St. John.

Ont., Burlington—B.A. 5/27—Municipality, City Hall, sewage disposal plant. Plans deposit $50. Gore & Storrie, 1130 Bay St., Toronto, engrs., associated with E. R. Swift, town engr., 36 Elgin St., Burlington, Ont.

BIDS ASKED—BUILDINGS

▲ **Ont., Hamilton**—HOUSING—B.A. 5/27—Central Mortgage & Housing Corp., 40 Eglinton Ave. E., Toronto, 100 rental housing units, $1,000,000. H. I. Stricker, c/o owner, engr. CD 12/8.

▲ **Ont., London**—HOUSING—B. A. 5/27—Central Mortgage & Housing Corp., 40 Eglinton Ave. E., Toronto, 100 rental housing units. $1,000,000. H. I. Stricker, c/o owner, engr. CD 10/28.

Que., St. Zacharie—CHURCH—Bids Asked—Parish of Paroisse, St. Zacharie, 3 in.-con., stone church, $350,000. R. Blanchet, 53 d' Auteuill St., Quebec City, archt.

SOON LETS CONTRACT—BUILDINGS

▲ **Ont., Preston**—FACTORY—Standard Machine & Tool Co., 870 Ottawa, St., Windsor, soon lets contract structural steel for factory in East Preston, Total est. $2,000,000. Allward & Gouinlock, 57 Bloor St. W., Toronto, archts. CD 3/17.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

NOVA SCOTIA—Halifax-Dartmouth Bridge, Comn. Halifax,

Canada Comstock Ltd., 2531 Walkley Ave., Montreal, Que., CA, **$110,000**, electrical and communications installations at Halifax-Dartmouth Bridge, Halifax. Dr. P. L. Bratley, 909 Drummond Bldg. Montreal, Que., engr. C. O. Fowler & Co., Capitol Block, Halifax, archt.

R. E. Stewart Constr. Corp., 862 Wellington St. S., Sherbrooke, Que., CA, **$800,000** 160 ft. hangar at H. M. C. S. Shearwater, Job 3033, DARTMOUTH, N. S. Defence Construction Ltd., 56 Lyon St., Ottawa, Ont. Bids Apr. 14. CD 3/23.

J. P. Porter & Sons Ltd., 1010 St. Catherines St. W., Montreal, Que., LB, **$300,000**, dredging, YARMOUTH, N. S. Dpt. P. Wks., Hunter Bldg., Ottawa, Ont. Bids Apr. 28. CD 4/19.

McNamara Constr. Co. Ltd., 42 Industrile St., Leaside, Ont., CA, **$158,944**, est. $235,000 trunk sewer (first section), KINGSTON, ONT. Municipality, City Hall, Kingston, Ont. CD 10/12.

B. Perini & Sons Canada Ltd., 49 Jackes Ave., Toronto, Ont., CA, **$743,713**, 3 story, 36x134 ft., 3 story, 75x164 ft., 2 story, 87x168 ft., concrete, brick OFFICERS QUARTERS and MESS, OTTAWA, ONT. Dpt. National Defence AIR, Ottawa, Ont. Bids Feb. 2. CD 1/18.

Swansea Constr. Co. Ltd., 363 Rogers Rd., Toronto, Ont., CA, **$435,995**, 36 and 42 in. water mains, from Roselawn Ave. and Avenue Road to Lawrence and Duplex Aves., TORONTO, ONT. Municipality of Metropolitan Toronto, City Hall, Toronto, Ont. CD 2/2/50.

Miron Constr. Ltd., 2201 St. Michel Rd., Montreal, Que., CA, **$140,367**, paving and sidewalks Namur St.;

Dual Mix Concrete Ltd., 3701 St. Michel Rd., Montreal, Que., CA, **$81,913**, paving and sidewalks, Viny Ave., Beaubarnois St., Prior St., MONTREAL, QUE. Municipality, City Hall, Montreal, Que.

BUILDINGS

LOW BIDS AND CONTRACTS

Diamond Constr. Co. Ltd., 60 Carlton St., Fredericton, N. B., CA, **$616,000**, science service LABORATORY, FREDERICTON, N. B. Dpt. Agriculture, Ottawa, Ont.

Hughes Constr. Ltd., 365 Rogers Rd., Toronto, Ont., CA, **$760,000**, Science Service LABORATORY, BELLEVILLE, ONT. Govt. of Canada, Dpt. Agriculture, Ottawa, Ont.

Ellis-Don Ltd., P.O. Box 853, London, Ont., CA, **$230,100**, plant growth chambers for science service LABORATORY, LONDON, ONT. Dpt. Agriculture, Govt. of Canada, Ottawa, Ont.

L. Markus & Son, 432 Pembroke St., Pembroke, Ont., CA, **$200,000** 2 story, 50x166 ft., concrete, brick PLANT addn., PEMBROKE, ONT. Eddy Watch Co., Ltd., Water St., Pembroke, Ont. Bids Feb. 24. CD 2/11.

S. L. Shields, 85 Wellesley St. E., Ltd., 15 Hawarden Crescent, Toronto, Ont., Owner Builds. **$720,000**, 7 story, bsmnt., 90-suite, brick, steel APARTMENT, 85 Wellesley St. E., TORONTO, ONT. CD 1/14/53.

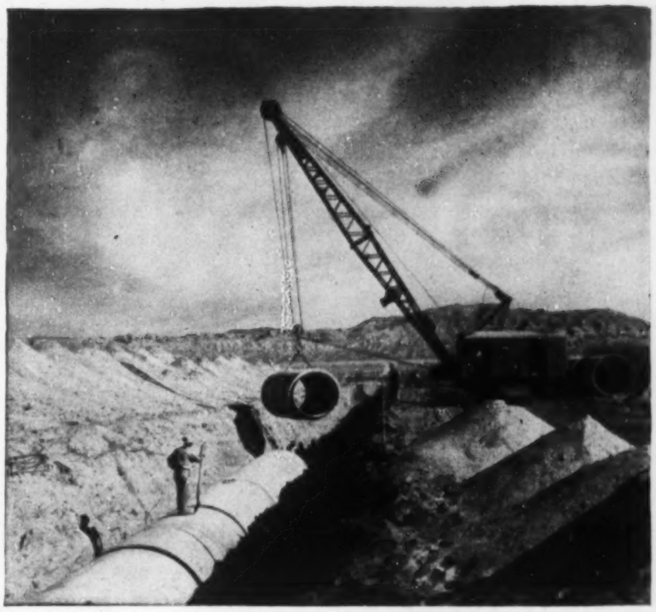
Tower Investment Corp. Ltd., 1437 Yonge St., Toronto, Ont., Owner Builds, **$400,000**, 50 suite, brick, block, steel APARTMENT, 619 Woodbine Ave., TORONTO, ONT. W. Shulman, 467 Spadina Ave., Toronto, Ont., archt.

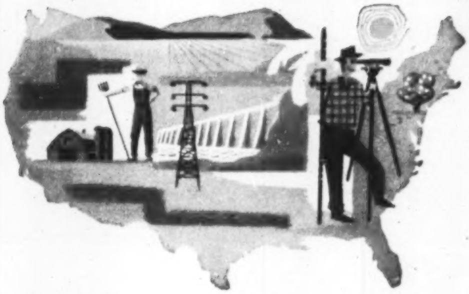
▲ **Key Constr. Co. Ltd.**, 1040 Bleury St., Montreal, Que., CA, **$1,205,983**, 35 MAGAZINES, BOUCHARD,

(Continued on page 148)

U. S. BUREAU OF RECLAMATION SPECIFIES

Concrete Pressure Pipe





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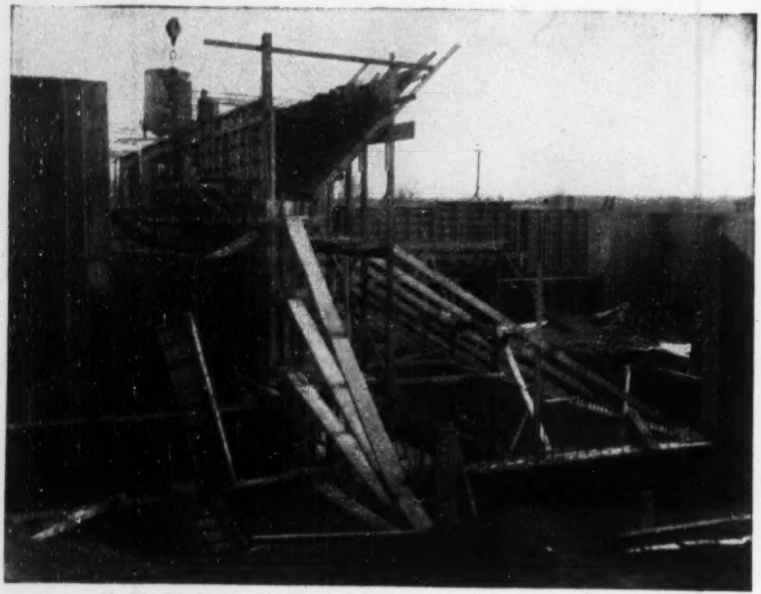

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World's Largest Builders of Heavy-Duty Air-Cooled Engines
MILWAUKEE 46, WISCONSIN

(Continued from page 146)

QUE. Govt. of Canada, Defence Constr. Ltd., 56 Lyon St., Ottawa, Ont. Bids **Apr. 21. CD 4/5.**

ALASKA

BIDS ASKED—HEAVY CONSTRUCTION

† **ALASKA**—B.A. 6/1—Alaska Road Comn., P.O. Box 1961, Juneau,
three I-beam bridges, Alaska Hy. and I-beam bridge on Richardson Hy. over Banner Creek. W. J. Niemi, c/o owner ch. engr. CC 3/3/52, under Streets and Roads.

LATIN AMERICA

BIDS ASKED—BUILDINGS

Colombia—GRAIN STORAGE—B.A. 6/30—Corporacion de Defensa de Productos Agricolas, Bogota, constr. import-export grain terminal at Cartagena. Plans deposit $100. Drying Plant Engineers, Inc., 1001 Connecticut Ave. N.W., Wash., D. C., U. S. A., and Cerrera 8A, No. 15-43, Piso 11, Bogota, Colombia, engrs.; adv. ENR 5/20.

Proposed Projects

WATER SUPPLY

Calif., Fair Oaks—City, City Hall, defeated $400,000 bonds, water distr. sys. CD 3/18.

▲ **Wash., Seattle**—City, County-City Bldg., Seattle, Zone 4, dam near outlet of Cedar Lake to store water for power and drinking. **$5,000,000.** R. W. Morse, water supt.

SEWERS, WASTE DISPOSAL

Fla., Kissimmee—City, sewage treatment plant, $490,000. CD 12/11/52.

Ill., Mount Vernon—City, c/o City Council sewer extens., imprvs., etc. **$375,000.**

Mich., Oak Park—City, Louise Shaw, clk., 13600 Oak Park Blvd., sanitary and storm sewer constr., **$400,000.** Robert J. McNutt, city engr.

▲ **O., Akron**—City, Leo G. Walter, Serv. Dir., City Hall, imprv. primary sewage treatment plant at Botzum, **$2,017,000;** secondary treatment plant, est. **$4,200,000.** Havens & Emerson, Leader Bldg., Cleveland, consult. engrs. **CD 11/16.**

▲ **O., Cincinnati-Hamilton Co. and State of** Ohio, Court House, sewerage sys. for Taylor Creek, main trunk sewer from Miami Station, up valley of Taylor Creek with branches in valleys of creek, **$2,014,570;** sewerage treatment plant for Taylor Creek Dist. at East Miami River Rd. and Taylor Creek, **$410,000.** George M. Lemmeli, co. engr. CD 4/21.

▲ **O., Springfield**—City, Harold R. Cheek, mgr., City Hall, sewage disposal plant expansion. **$1,600,000.** Paul A. Uhlmann & Assocs., 1441 N. High St., Columbus, consult. engrs. CD 11/13/51.

▲ **Pa., Berwyn**—Tredyffrin Twp. Comn., Berwyn, sewage treatment plant, sewers and pumping stations. **$5,000,000.** Albright & Friel, Inc., 121 S. Broad St., Phila., engr.

Utah, Salt Lake City—Salt Lake Sanitary Dist. 2, City-County Bldg., voted **$850,000** bonds April 27, sewer collection sys.

Ont., London—City Council, Mayor Allan Rush, enlarging West London disposal plant, aeration unit. **$250,000.** Roy Garrett, City Hall, city engr. CD 3/15.

STREETS AND ROADS

▲ **KENTUCKY**—Dpt. Hys., Frankfurt,
KENTUCKY TURNPIKE

Elizabethtown to Rolling Fork River near Lebanon Junction Sect. A, J. Stephen Watkins, 2516 E. High St., Lexington, consult. engrs.

Rolling Fork to Salt River near Shepherdsville Sect. **B**, Tecon Engineers, Inc. and Berger Assoc., Louisville, Ky., consult. engrs.

Salt River to Louisville Sect. C, Hazelet & Erdel, 304 W. Liberty St., Louisville, consult. engrs. Howard, Needles, Tammen & Bergendoff, 1805 Grand Ave., Kansas City 8, Mo., are general consultants on project. Total cost **$30,000,000.**

Mich., Bay City—City, Dpt. P. Wks., wid'n. various street, **$400,000;** black topping streets, **$200,000.** Ronald K. McGillivray, City Hall, engr.

Mich., Mount Clemens—City, City Comn., Long Range St. paving, imprvs. **$500,000.**

Mich., Port Huron—St. Clair Co. Bd. Rd. Comrs., County Bldg., Port Huron, 14 mi. asph. surf. and road base preparation on 10.3 mi., **$427,000.** Charles E. Ash, County Bldg., consult. engr.

▲ **N. Y., White Plains**—Bd. Supervs. Westchester Co., County Office Bldg., reconstr. and imprv. 18 mi. Hutchinson River Parkway, **$35,000,000.** Edwards, Kelcey & Beck, 250 Park Ave., New York, Zone 17, consult. engrs. CD 11/2/44.

O., Cleveland—Cuyahoga Co., Court House, Zone 14, repaving Bradley Rd., from Detroit to Center Ridge Rds., Westlake. **$300,000.** Albert S. Porter, c/o owner, co. engr. CD 11/13/51.

Tex., McKinney—City, street imprvs., paving. $300,000.

(Continued on page 150)

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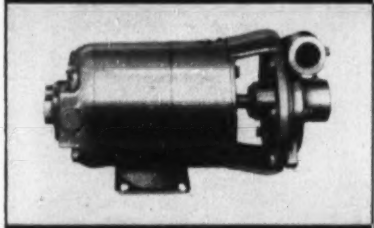
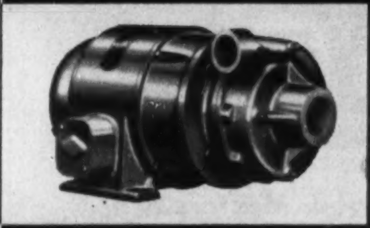
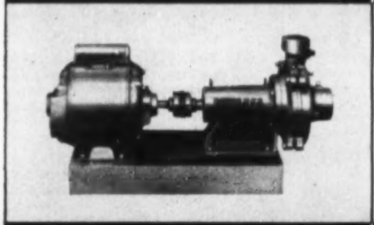


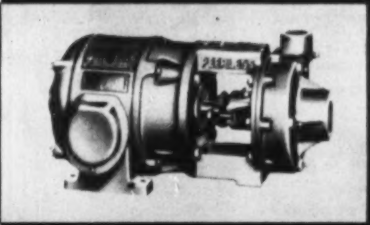
2, 3, 5 hp FACEMOUNT



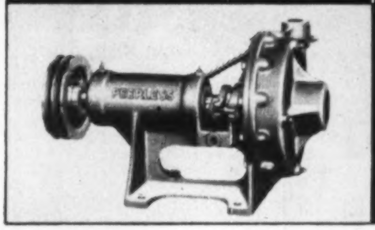
FLEXIBLE-COUPLED Fractional hp



5-50 hp DIRECT CONNECTED



FLEXIBLE-COUPLED Integral hp



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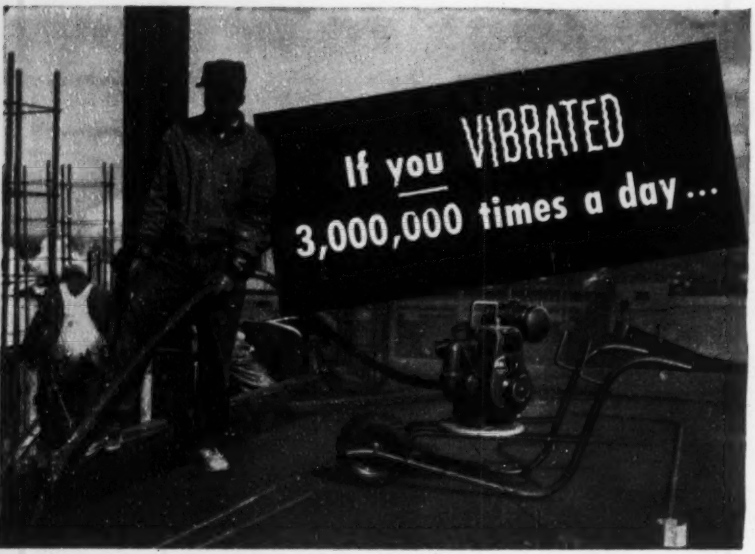

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(Continued from page 148)

AIRPORTS

† **Ky., Fort Campbell**—FACILITIES—U. S. Eng., P. O. Box 1070, 303 Federal Office Bldg., 7 Ave. and Broadway, Nashville, Tenn., imprv. Fort Campbell Air Force Base. **$760,000** CD 9/28/51.

PUBLIC BUILDINGS

▲ **Calif., Covina**—SCHOOLS—Covina Elementary School District, Covina, $1,000,000 bond election June 29, school construction. **$6,000,000.**

Calif., La Mesa—SCHOOL—La Mesa-Spring Valley School District, Heller Bldg., plans by Sam W. Hammill, Scripps Bldg., San Diego, 49,000 sq. ft. La Mesa Junior High School. **$500,000.**

Calif., Los Angeles—SCHOOL—Los Angeles City School District, 1425 S. San Pedro St., plans by Burnett C. Turner, 5657 Wilshire Blvd., 1 story, frame, stucco Vintage St. School **$360,000**; plans by Arthur Froelich, 383 S. Robertson Blvd., Beverly Hills, Northridge School, Lindley Ave. and Dearbonr St., Northridge, **$360,000.** CD 6/13/52.

▲ **Calif., Oxnard**—SCHOOL—Oxnard High School District, 5 and H Sts., Oxnard, voted **$1,585,000** bonds, high school in Camarillo. CD 2/24.

▲ **Calif., Pasadena**—SCHOOLS—Pasadena City High School District, 351 S. Hudson Ave., **$6,200,000** bond election June 8, school imprvs. CD 11/2/44.

▲ **Calif., Riverside**—SCHOOL—Riverside School District, Riverside, voted **$5,000,000** bonds, schools. CD 5/13/49.

▲ **Calif., Santa Cruz**—SCHOOLS—Santa Cruz School Union High School District, Santa Cruz defeated **$2,000,000** bonds, schools. CD 4/6.

▲ **Calif., Watsonville** — SCHOOLS — Watsonville High School and Elementary School District, Watsonville **$1,050,000** bond election Oct. 5, for high school and **$600,000** bonds for elementary school.

Conn., West Hartford—SCHOOL—Town, Bd. Educ., Dr. Edmund H. Thorne, supt. Schools, 51 Memorial Rd., plans by Willard Wilkins, 945 Asylum Ave., Hartford, elementary school, Britain Ave. near Corbin's Corner, over **$500,000.**

▲ **Ill., East St. Louis**—SCHOOLS—East St. Louis School District, Bd. Educ., East St. Louis, voted **$6,921,009** bonds, May 1, 19 school projects, incl. new Senior High School, 51 and State Sts. **$3,997,561**, and other schools. Charles B. Spencer, Chemical Bldg., 721 Olive St., St. Louis 1, Mo., archts. CD 2/25.

▲ **Ind., Indianapolis**—SCHOOLS—Washington Township School Bldg. Holding Co., 654 E. 49 St., plans by Lennox & Matthews & Assocs., Inc., 644 E. Maple Rd., high school **$2,500,000**; Junior High School **$1,500,000.** CD 6/2.

Ia., Newton—SCHOOLS—Bd. Educ., Newton, voted **$632,000** bonds, 2 new grade schools, repairing elementary school.

▲ **Kan., Topeka**—OFFICE—State, Dpt. Admin., State House, plans by John Brown, state archt., State House, 12 story state office bldg. **$8,456,000**, Finney & Turpinseed, Crawford Bldg., Topeka, consult. engrs. CD 11/19/52.

Me., Augusta—PATIENTS—State Dpt. Institutional Service, State House, plans by Bunker & Savage, 283 Water St., 60x200 ft., brick, concrete, steel patients bldg., State Hospital. **$720,000.** Stilphen Eng. Co., 26 Roberts St., Sanford, mech. consult.-engr. CD 1/30/53.

▲ **Mass., Andover**—SCHOOL—Town, High School Bldg. Comn., plans by Howard L. Rich & Herman F. Tucker, 45 Newbury St., Boston, high school. **$1,000,000.**

▲ **Mass., Amherst**—OFFICE—State, University of Mass., office of treasurer, Kenneth W. Johnson, Amherst, plans by James A. Britton, 315 Federal St., Greenfield, classroom and faculty office, **$1,000,000.**

▲ **Mass., Framingham**—HOME FOR THE AGED—Commonwealth of Mass., Dpt. Mental Health, 15 Ashburton Place, Boston, remodeling Home for the Aged. **$1,650,000.**

▲ **Mich., Detroit**—GARAGE—City, City Council, Guardian Bldg., underground parking garage beneath Grand Circus Park, **$4,600,000.** H. K. Ferguson Eng. Co., 600 Woodward St., Detroit, consult. engrs. CD 2/16/53.

Minn., St. Louis Park—CIVIC CENTER—Village, J. Justad, clk., **$550,000** bond election June 8, civic center incl. several bldgs., admin. bldg., public safety bldg. Brandhorst & Leadholm, St. Louis Park, archts. CD 12/2.

O., Cincinnati—SCHOOL—Bd. Educ. of Bridgetown, Harrison Pike, plans by Schatz & Elliston, 706 Walnut St., 2 story bsmnt. elementary school, Race Rd. **$625,000.** Hall, McAllister & Stockwell, 706 Walnut St., consult. engrs.

▲ **O., Cincinnati** — HOUSING — Cincinnati Metropolitan Housing Auth., 595 Armory Ave., 170 unit public housing, Amy Ave., at edge of Madisonville. **$1,700,000.** CD 4/10/52.

▲ **O., Toledo**—MEDICAL SCHOOL BLDGS.—University of Toledo, 2801 W. Bancroft St., medical school at Maumee Valley Hospital site, incl. basic science laboratory with equip. **$3,000,000**; addnl. out-patient facilities, **$2,000,000.** CD 1/12/53.

▲ **Pa., Clarks Summit**—PATIENTS BLDG.—General State Auth., 18th and Herr Sts., Harrisburg, plans by George M. D. Lewis, 445 Kressler Ct., Scranton, senile patients bldg., Clarks Summit State Hospital. **$1,300,000.** A. F. Jones, c/o owner, ch. engr. CD 12/24.

(Continued on page 152)

The MOST POSITIVE, TRUSTWORTHY detector for fire alarm or release systems is DETECT-A-FIRE®

1. MODERN HOSPITAL DESIGNERS TAKE NO CHANCES on fire protection systems. To make sure of quick, effective performance they use detectors employing an entirely different principle, called Rate-Compensation Actuated. The Fenwal DETECT-A-FIRE thermostat actuates the alarm *instantly* when surrounding air temperature reaches a pre-determined danger level.

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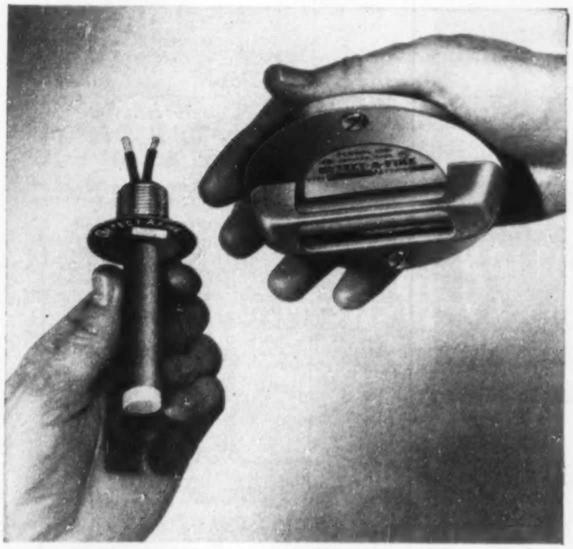

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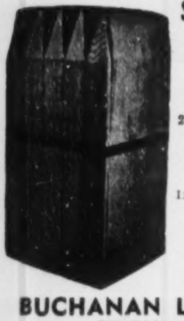

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—30"	24.00	22.50
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—18"	7.50	6.50
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(Continued from page 150)

† **Va., Norfolk**—CLUB—P. Wks. Office, Fifth Naval Dist., U. S. Naval Station, 2 story, masonry enlisted men's club. **$600,000.**

▲ **Wis., Portage**—COURT HOUSE—Columbia Co., Portage, court house, **$1,250,000.**

Wyo., Laramie—GEOLOGY—University of Wyoming, Campus, Laramie, plans by Porter & Bradley, engrs. and archts., 1009 E. Lincolnway, Cheyenne, 3 story, bsmnt., 52x109 ft., steel, concrete geology bldg. **$500,000.**

Wyo., Powell—SCHOOL, etc.—School District No. 1, Park County, Powell, voted bonds, grade school and auditorium. **$550,000.** CD 4/6.

•

COMMERCIAL BUILDINGS

▲ **Conn., Berlin**—RESTAURANT—Albert M. Levett Co., Inc. ,100 College Ave., New Haven, restaurant and parking lot, Wilbur Cross Parkway, **$1,000,000.**

▲ **D. C., Wash.**—OFFICE—American Federation of Labor, 901 Massachusetts Ave. N.W., Wash., D. C., plans by Voorhees, Walker, Folev & Smith, 101 Park Ave., New York, N. Y., 10 story office, 800 block of 16 St. N.W. **$3,500,000.**

▲ **Fla., Key West**—HOTEL—Max Cohen, 1501 Atlantic Blvd., plans by Norman Giller & Assocs., 420 Lincoln Rd., Miami Beach, hotel. **$1,000,000.**

▲ **Ga., Pine Mountain Valley**—TEMPLE—The Hall of Our History, Inc., Palmer Bldg., Atlanta, project abandoned, granite temple, **$15,000,000.** CD 2/19

▲ **Mass., Lynnfield and Peabody**—SHOPPING CENTER—Sherin & Lodgin, (owner's representative) 80 Federal St., Boston, shopping center 47 acres approx. 30 stores. **$1,800,000.**

▲ **Mo., St. Louis**—HOSPITAL—Shriners Hospital for Crippled Children, 700 S. Kingshighway, Zone 10, hospital, or enlargement and modernization present bldg., rein.-con., brick, steel, **$2,000,000.**

Neb., Lincoln—OFFICE—Security Mutual Life Insurance Co., Trust Bldg., office, **$500,000.**

N. H., Portsmouth—RESIDENCES—Beacon Constr. Co., 102 Hano St., Alston, Mass., plans by L. O. Geoffrion, 1240 Maplewood Ave., residential development, Meadowbrook Park, **$800,000.**

▲ **N. J., Camden**—RESIDENTIAL DEVELOPMENT—Owner, c/o Lewis J. Cowan, archt., 15045 Pine St., Phila., Pa., residential development, 29 and Pierce Sts. **$1,500,000.**

▲ **N. J., Toms River**—HOSPITAL—Community Memorial Hospital, 31 Main St., plans by Bolton Martin & White, 266 S. 17 St., Phila., Pa., hospital, **$1,147,145.** Horace B. Nicholson, 213 S. Broad St., Phila., Pa., consult. engr. CD 2/12.

▲ **N. Y., New York**—APARTMENT—Bowery Savings Bank, 110 E. 42 St., Zone 17, plans by York & Sawyer, 101 Park Ave., Zone 17, 13 story apartment, 349-355 W. 145 St. and 251-265 Edgecombe Ave. **$2,659,000.**

▲ **N. Y., New York**—APARTMENT—Timston Corp., 8 E. 48 St., Zone 17, plans by Albert E. Schaefer, 527 Fifth Ave., Zone 17, apartment, 248 E. 39 St., **$1,050,000.** S. J. Silbert, 158 E. 35 St., New York Zone 16, engr.

N. C., Elon College—DORMITORIES—Elon College, Dr. L. E. Smith, pres., Elon College, two dormitories, **$650,000.** CD 1/30/46.

▲ **O., Cincinnati**—RESIDENCES—Faxon Realty Co., 3601 Bellecrest St., 250 one-family brick residences, 150-acre tract bounded by Linwood, Paxton and Grandin Rds. and Delta Ave., **$6,500,000;** 17 two story, brick bsmnt., apartment bldgs., Linwood and Delta Ave., **$680,000.** Nunlist & Frolicher, Traction Bldg., consult. engrs.

Okla., Tulsa—CLINIC—Dr. F. A. Glass, 2000 S. Xanthus St., plans by Black & West, Tri State Bldg., medical clinic, 2020 S. Xanthus St. **$600,000.**

▲ **Ore., Portland**—BANK—U.S. National Bank, 321 S. W. 6th St., plans by Belluschi and Skidmore, Owings & Merrill, 2040 S. W. Jefferson St., 5 story bank addn., and razing 3 story bldg. **$1,000,000.**

▲ **Pa., Flourtown**—SHOPPING CENTER—Food Fair, Inc., 2223 E. Allegheny Ave., Phila., plans by Louis Kasoff, c/o owner, shopping center, **$2,500,000.**

▲ **Tenn., Memphis** — APARTMENT — Cita Enterprises, Inc., c/o A. L. Aydelott & Assocs., archts., 2080 Peabody St., apartment, **$1,500,000.**

▲ **Tex., Dallas**—APARTMENTS—Tips Apartment Co., c/o C. R. Tips, 701 Forest Ave. Rd. **(A)** 100 masonry apartment units, **$675,000 (B)** 100 masonry apartment units, **$675,000 (C)** 100 masonry apartment units, **$675,000 (D)** 100 masonry apartment units, **$675,000 (E)** 100 masonry apartment units, **$675,000 (F)** 100 masonry apartment units, **$675,000 (G)** 100 masonry apartment units, **$675,000 (H)** 100 masonry apartment units, **$675,000 (I)** 100 masonry apartment units, **$675,000** in area of Overton Rd. and Southern Oaks Blvd.

Tex., Fort Worth—OFFICE—Commercial Standard Insurance Co., Raymond Buck, pres., Commercial Standard Bldg., 7th and Main Sts., 3 story, 50,000 sq. ft. brick, tile, steel, concrete office bldg., air-conditioning in Ridglea Addn. **$500,000.**

▲ **Tex., Houston**—HIGH SCHOOL—Sisters of Incarnate Word, Post Oak and Richmond Rds., plans by T. George McHale, 3501 Buffalo Dr., masonry Marian High School. **$1,200,000.** Bernard Johnson & Assocs., 4926 Travis St., consult. engrs.

▲ **Tex., Houston**—MERCHANDISE MART—Southwestern Merchandise Mart of Texas, c/o R. Oliver Thomas,

(Continued on page 154)

GENERAL MOTORS

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AUTOMATIC DRIVE TRUCKS

THIS announcement marks the achievement of a goal towards which General Motors has been working for a quarter-century.

That is the elimination of manual gearshifting in GM-built motor vehicles—*trucks as well as cars*—a task first undertaken by our research engineers in 1929.

It was no easy assignment. It took more than ten years of hard work, the testing and discarding of hundreds of different mechanisms, before the problem was superbly solved in passenger cars by our Hydra-Matic, Dynaflow and Powerglide automatic transmissions.

In trucks the need for a self-shifting drive is infinitely greater—and so is the engineering problem because of the far heavier loads carried and the larger number of forward-speed gears required to move them.

It was not simply a matter of adapting a passenger car drive. A completely different automatic unit had to be designed and that took still more time.

But by 1950, our GMC Truck & Coach Division had developed and thoroughly road-tested a Dual Range Hydra-Matic-type drive for medium-weight trucks. Then came Korea and our entire production of Truck Hydra-Matic Transmissions was required for army vehicles where its superiority was proved in front-line service.

Within the past eighteen months both four-speed and eight-speed versions of this battle-proved transmission have been successfully introduced to the public in light-duty and middleweight GMC trucks. But there still remained the problem of heavy-duty trucks, some of which require as many as 15 forward speeds.

Now our engineers—drawing upon this backlog of twenty-five years' experience—have developed a Twin Hydra-Matic Multiple-Speed self-shifting drive for trucks rated above forty-five thousand pounds gross combination weight.

Thus has GM marshalled its inventive skills to bring the many advantages of Hydra-Matic Hauling to every class of truck operator. These benefits include:

Lower fuel cost—because Truck Hydra-Matic automatically keeps the engine in proper gear for every operating condition, eliminating wasteful engine "gunning."

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Greater safety—because Truck Hydra-Matic does the shifting, easing the driver's work and permitting him to concentrate on the road ahead.

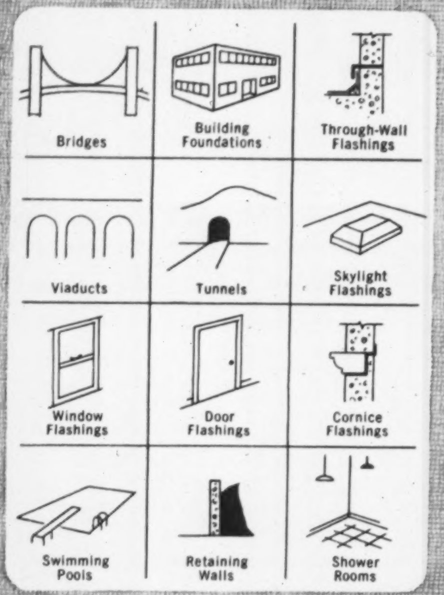
I think these are good reasons why every user of trucks should investigate the GMC line of Hydra-Matic Trucks—whether you use a small pickup or a fleet of heavy highway haulers.

You are cordially invited to call upon your local GMC dealer to learn more about them.

H H Curtice

President

GENERAL MOTORS CORPORATION



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(Continued from page 152)

C & I Life Bldg., plans by Finger & Rustay, C & I Life Bldg., Merchandise Mart, 5 floors of 10,000 sq. ft. each for manufacturers to display merchandise; 62,500 sq. ft. for larger exhibits and an auditorium, in area of Shamrock. **$1,500,000.**

Va., Alexandria—RESIDENCES—William L. Warfield, 1015 N. Highland St., Arlington, 26 one story masonry, frame residences near here. **$520,000.**

▲ **Va., Arlington**—RESIDENCES—Lee A. Fowler, 1604 "Q" St. N. W., Wash., D. C., 95 one story, bsmnt. masonry residences. **$1,500,000.**

Va., Portsmouth—SYNAGOGUE, etc.—Gamley Chesed Synagogue, 519 County St., plans by Leavitt & Assocs., 6404 Powhatan Ave., Nofolk, 1 story, masonry synagogue, educational bldg. and gymnasium, **$500,000.**

Va., Warwick—RESIDENCES—Bilt-Rite Homes, A. J. Ponton, Jr., 217 Hilton Terrace, 94 one story, frame residences, **$832,000.**

Wis., Appleton—SHOPPING CENTER—Hoffman Shopping Center, Appleton, plans by Geo. Narovec, 626 W. Wisconsin Ave., second unit. 1 story, 180x340 ft. shopping center. **$550,000.**

Wis., Milwaukee—PAROCHIAL SCHOOL—Our Lady Queen of Peace Catholic Congregation, 3200 S. 28 St., plans by Francis S. Gurda, 1015 W. Mitchell St., parochial school. **$500,000.**

▲ **Ont., London**—HOMES, etc.—Roy James Constr. Co., 609 William St., 100 brick, frame homes, shopping center in southeastern section. **$1,250,000.**

▲ **Ont., Toronto**—HOSPITAL—Branson Hospital, Finch Ave. at Bathurst St., plans by K. L. Graham, 18 Rosemount Ave., Rosemount, 100-bed, one and two story, steel, brick, stone hospital addn. **$1,000,000.** CD 8/10, under LB.

Que., Montreal—APARTMENT—M. Neuman, c/o Mayerovitch & Benstein, archts., 1500 St. Catherine St. W., 8 story, bsmnt., rein.-con., brick apartment, Drummond St., above Sherbrooke St. W. **$500,000.**

▲ **Que., Montreal West**—HOUSING—Westminster Gardens Development, c/o 4720 Ridgevale Ave., plans by Ben-Ami Shulman, 5174 Cote de Neiges Rd., 104-unit housing program. **$1,300,000.**

INDUSTRIAL BUILDINGS

Ala., Brundidge—PLANT—Reigel Textile Corp., Greenville, plans by Carl H. Lancaster, 115 S. McDonough St., Montgomery, textile plant, over **$500,000.** CD 12/11.

▲ **Conn., Bridgeport**—FACTORY—Bridgeport Thermostat Div., 1225 Connecticut Ave., plans by Leo F. Caproni, 1221 Chapel St., New Haven, 150,000 sq. ft. masonry, glass, steel factory, Clark and Hill Sts. **$1,500,000.**

▲ **Mass., Canton**—INDUSTRIAL CENTER—Metropolitan Industrial Center, 127 Federal St., Boston, industrial center Rtes. 1 and 128, 556 acre tract, **$5,000,000.** Fay, Spofford & Thorndike, 11 Beacon St., Boston, consult. engrs. Road constr. to A. A. Will Corp., 1094 Blue Hill Ave., Hyde Park, Mass.

▲ **Mass., Westwood**—INDUSTRIAL CENTER—William K. Morton, 60 State St. and Edward D. Hobbs & Co., 79 Milk St., Boston, industrial center, Rtes. 1 and 128. **$1,000,000.** Fay, Spofford & Thorndike, 11 Beacon St., Boston, consult. engrs.

Okla., Tulsa—PLANT—Dowell, Inc., 1150 N. Utica St., plans by F. V. Kershner, Tri-State Bldg., mfg. plant addn., 1150 N. Utica St. **$600,000.**

▲ **Tex., Houston**—PLANT—Wm. R. Staats & Co., 640 S. Spring St., Los Angeles, Calif., and Purvin & Gertz & Assocs., Reserve Loan Life Bldg., Dallas, 80,000 tons annual capacity butadiene plant. **$30,000,000.** The Fluor Corp. Ltd., 2500 Atlantic St., Los Angeles, Calif. to make preliminary estimates, etc. Melvin H. Gertz, Reserve Loan Life Bldg., Dallas, consult. engr.

▲ **Wis., Prairie du Chien**—POWER PLANT—Wisconsin Power & Light Co., 122 W. Washington St., Madison, power plant. **$20,000,000.**

Ont., Oshawa—PLANT OFFICE—General Motors Ltd., Oshawa, 2 story plant office. **$700,000.**

UNCLASSIFIED

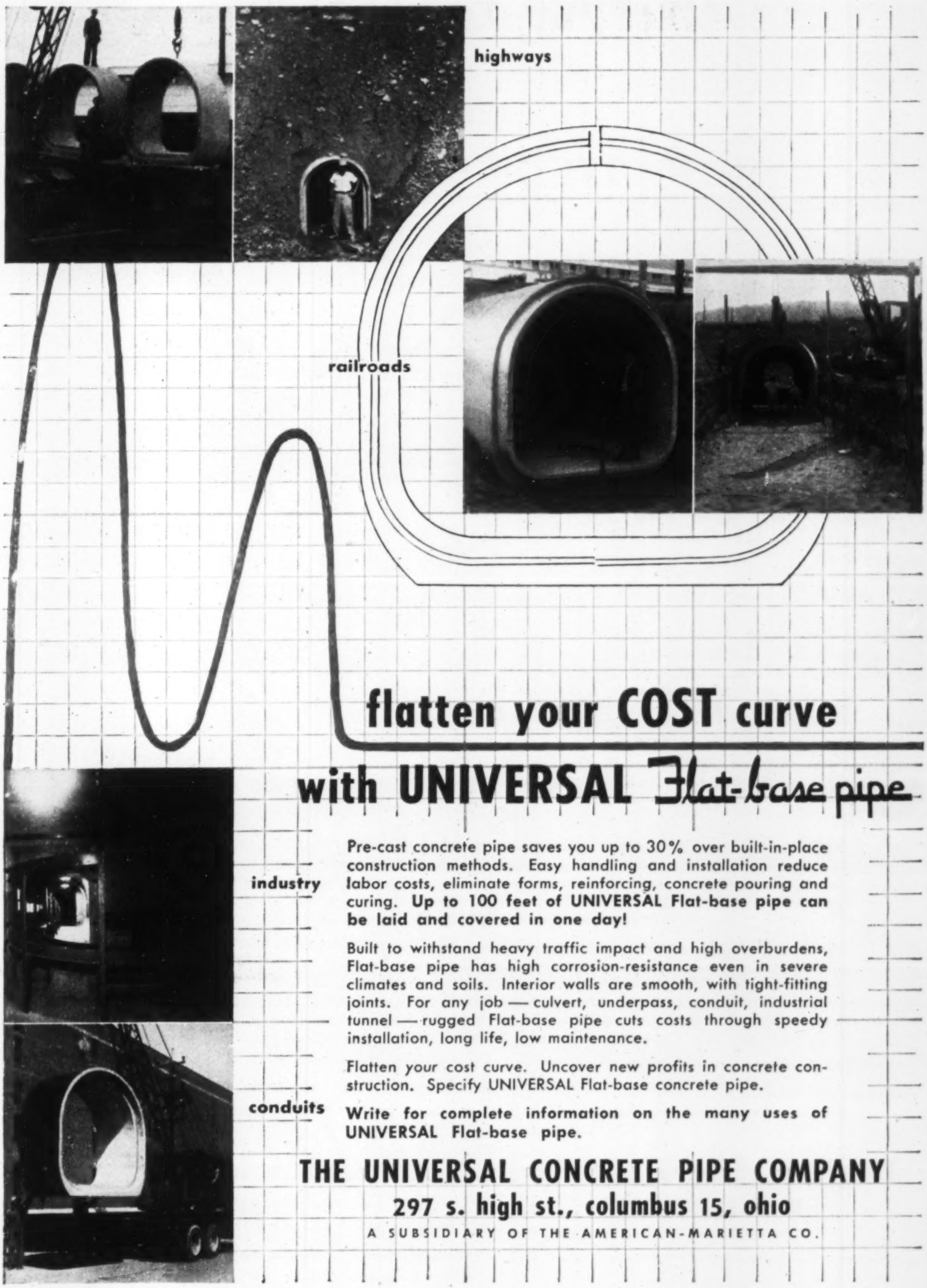
Fla., Quincy—GAS DISTRIBUTION SYSTEM—City, natural gas distr. sys. **$500,000.** Porter & Barry, 1730 Main St., Baton Rouge, La., engrs. CD 4/16/53.

Mich., East Detroit—UTILITIES—Madison Constr. Co., 600 Woodward Ave., Detroit, installing water, sewer, paving roads, for new Fairway Golf Course Development. **$400,000.**

▲ **Tex., Dallas**—POWER LINES, etc.—Dallas Power & Light Co., Dallas Power & Light Bldg., expanded power transmission lines from Mountain Creek Power Plant around west and north edges of city, **$1,675,000;** some power line rehabilitation work in area of Mountain Creek Plant, **$150,000;** gas main extens. in outlying areas, **$109,297.** CD 1/22/52.

▲ **West Virginia, Virginia and Maryland**—GAS LINE—Atlantic Seaboard Corp., 1033 Quarrier St., Charleston, W. Va., 75 mi. parallel 26 in. welded joint gas line from Cobb Compressor Station to Rockville, Md. and increase power 1,100 hp. Cleveland Comp. Station, Upshur Co., W. Va., 2,200 hp. Lost River Comp. Sta., Hardy Co., W. Va. **$10,000,000.** CD 5/1/51.

▲ **West Virginia**—GAS STORAGE POOLS—United Fuel Gas Co., 1033 Quarrier St., Charleston, establish 2 underground gas storage pools to store 28 billion cu. ft. incl. 2 compressor stations and 53 mi. 24 and 20 in. gas lines, drilling 12 new wells and reconditioning 28 old wells. **$14,000,000.**



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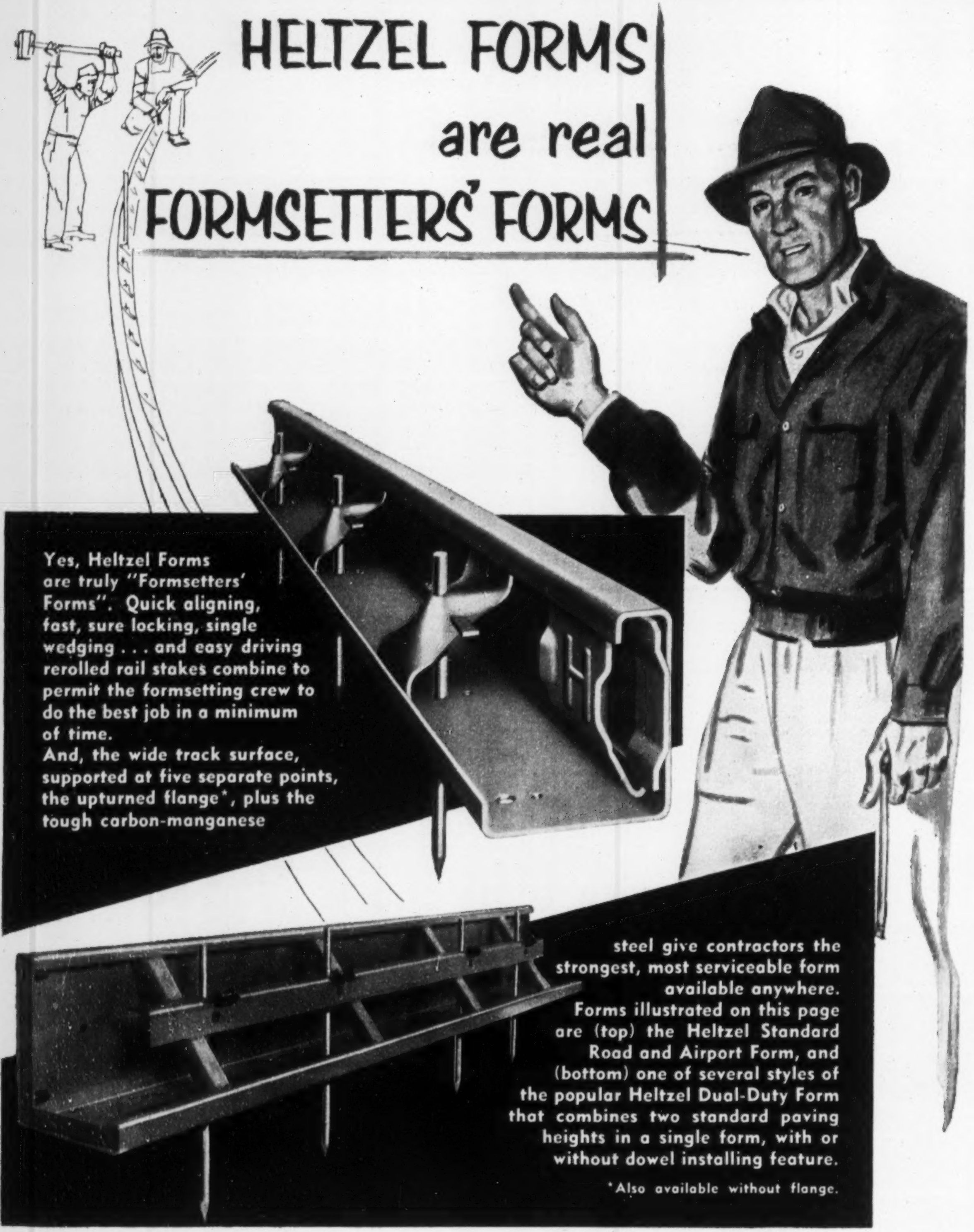

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Bids—Low Bids—Contracts—Second Section

NEW ENGLAND

BIDS ASKED—HEAVY CONSTRUCTION

STATE HIGHWAY LETTINGS

BRIDGES
May 25 Massachusetts

STREETS AND ROADS
May 25 Massachusetts

▲ MAINE—B.A. 5/28—Maine Turnpike Auth., 17 Bishop St., Portland,

Portland to Augusta (Augusta Exten.) Sect. 2, Contr. 218 constr. 13 bridges along route of Turnpike Exten. between Mile 42 in city south Portland and Mile 50 in city of Portland and along routes of South Portland connection and Falmouth Spur or (B) under two separate contracts.

Contr. 218A, incl. 7 of above mentioned 13 bridges.

Contr. 218B, which incl. remaining 6 bridges, such bridge constr. will incl. erecting steel superstructure. Plans deposit $35. Howard, Needles, Tammen & Bergendoff, 55 Liberty St., New York 5, N. Y., consult. engrs. CD 5/1/53.

BIDS ASKED—BUILDINGS

▲ **Me., Augusta**—OFFICE—B.A. 5/28—State, Dpt. P. Bldgs., State House, state office, Grove, Capital and Jackson Sts. $3,000,000. Plans deposit $35 refundable. Extended date. Miller & Beal, Inc., 465 Congress St., Portland, archt. CD 5/3.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION

STATE HIGHWAY LETTINGS

BRIDGES
June 1 Maryland

STREETS AND ROADS
May 25, 27 Maryland May 26, June 2 Delaware
May 28 Pennsylvania

▲† **Del., Dover**—APRONS, etc.—B.A. 6/11—U. S. Eng., 121 North Broad St., Phila. 1, Pa., aprons and service roads in the apron area, Dover Air Force Base, ENG-36-109-54-189. $3,000,000. Extended date. CD 5/5.

▲† **Del., Dover**—RUNWAY ALTERATIONS, etc.—B.A. 6/16—U. S. Eng., 121 North Broad St., Phila. 1, Pa., altering runways, altering taxiway, warm-up pads, and runway lighting, Dover Air Force Base. $3,000,000. CD 5/7.

▲ **New York-New Jersey**—N. J. LAND SECTION—B.A. 6/22—At office Chief Engineer of The Port of New York Auth., 111 8th Ave., New York 11, N. Y. Contr. LT-160.009, constr. New Jersey Land Sect. for Third Tube of Lincoln Tunnel. Plans deposit $100. Extended date.

BIDS ASKED—BUILDINGS

▲ **Pa., Phila.**—HIGH SCHOOL—B.A. 6/4—Bd. Educ., 21 and Winter Sts., South Phila. High School, 3rd, Broad, Jackson Sts. and Snyder Ave. $7,000,000. Gravell & Duncan, 1600 Walnut St., consult. engrs. CD 9/18/52.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **George F. Driscoll Co. & Moccia Constr. Co.**, 41 E. 42 St., New York 17, N. Y., LB **$5,465,645**, general constr.;

Afgo Eng. Corp., 475 Adelphi St., Brooklyn 17, N. Y. LB **$543,000**, heating;

Dropkin Bros., Inc., 205 Bedford Ave., Brooklyn 11, N. Y. LB **$374,900**, electrical work;

Lipsky & Rosenthal, Inc., Lexington Ave. and 115 St. New York 29, N. Y., LB **$628,970**, plumbing for Howard HOUSES, Proj. No. NYS-58-3, in area bounded by E. New York Ave., Stone Ave., Glenmore Ave. and Thatford Ave. and northerly portion of area bounded generally by Glenmore Ave., Watkins St., Pitkin Ave. and Thatford Ave. and northeasterly portion of that area bounded generally by Glenmore Ave., Thatford Ave., Pitkin Ave. and Rockaway Ave. and easterly portion of area bounded generally by East New York Ave., Thatford Ave., Glenmore Ave. and Rockaway Ave., Brooklyn Boro, BROOKLYN, N. Y. New York City Housing Auth., 63 Park Row, New York 38, N. Y. Bids May 11. CD 4/30.

▲ **Edward J. Walsh**, 111 Fairfield Ave., Upper Darby, Pa. Separate Contracts. **$4,000,000**. RESIDENTIAL DEVELOPMENT, near Bullens Lane, WALLINGFORD, PA.

SOUTH

BIDS ASKED—HEAVY CONSTRUCTION

STATE HIGHWAY LETTINGS

BRIDGES
May 28 Kentucky

STREETS AND ROADS
May 26, June 16 Louisiana May 28 Kentucky

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **Henry Bickel Co.**, 1020 E. Chestnut St., Louisville, Ky. and **Chas. E. Cannell Co.**, 2138 Floyd St., Louisville, Ky. LB, **$1,549,750.** general contract and WW exten., coagulation basin and filter beds, LOUISVILLE, KY. Louisville Water Co., 435 S. Third St., Louisville, Ky. Bids May 10. CD 4/20.

MIDDLE WEST

BIDS ASKED—HEAVY CONSTRUCTION

STATE HIGHWAY LETTINGS

BRIDGES
May 25 Wisconsin

STREETS AND ROADS
May 25 Wisconsin June 8 Ohio

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Treuhaft-Keyes Co.**, 10514 Shaker Blvd., Cleveland 4, O. Owner Builds. **$12,000,000-$15,000,000.** 340 HOMES, 102-acre site, Richmond Rd., LYNDHURST, O.

▲ **G. J. Goudreau & Co.**, 9801 Brookpark Rd., Cleveland 29, O. Owner Builds. **$3,500,000.** 1,759 units APARTMENT DEVELOPMENT, Big Creek Pkway., PARMA, O. George S. Voinovich, 1922 E. 107 St., Cleveland, O., archt.

▲ **Long Constr. Co.**, Rialto Bldg., Kansas City, Mo. CA **$5,000,000** 3 story HEADQUARTERS BLDG. for Manufacturing Services Div., DEARBORN, MICH. Ford Motor Co., 3000 Schaefer St., Dearborn, Mich. Bids Apr. 30. CD 4/26.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION

STATE HIGHWAY LETTINGS

STREETS AND ROADS
May 27 Kansas

▲† **South Dakota**—B.A. On Or About 8/15—U. S. Eng., 1709 Jackson St., Omaha, Neb., powerhouse superstructure, switchyard and transformer_yard for Gavins Point Reservoir, Proj. near Yankton, Inv. No. CIVENG-25-066-54-158. $2,000,000-$5,000,000. Extended date. CD 5/5.

FAR WEST

BIDS ASKED—HEAVY CONSTRUCTION

STATE HIGHWAY LETTINGS

BRIDGES
June 2 California

STREETS AND ROADS
June 3 California

SOON LETS CONTRACT—BUILDINGS

▲ **Idaho, Mountain Homes**—HOUSING—Dpt. Army, Contracting Officer, Air Force Base, Mountain Home, soon lets contract construct, manage and finance 500-unit rental housing $5,000,000. Hummel, Hummel & Jones, 1324 Idaho St., Boise, Idaho and R. E. Alexander, 3657 S. La Brea St., Los Angeles, Calif., archts. CD 4/14.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Bechtel Corp.**, 220 Bush St., San Francisco, Calif., CA, **$15,000,000.** design and construct catalytic reforming unit, EL SEGUNDO, CALIF. Standard Oil Co., 225 Bush St., San Francisco, Calif. CD 8/17.

▲ **Bechtel Corp.**, 220 Bush St., San Francisco, Calif., CA, **$15,000,000,** design and construct catalytic reforming PLANTS, RICHMOND, CALIF. Standard Oil Co., 225 Bush St., San Francisco, Calif. CD 8/12.

▲ **M & K Corp.**, Financial Center Bldg., San Francisco, Calif., LB, **$2,700,000,** Herbert Hoover Junior High SCHOOL, SAN FRANCISCO, CALIF. Dpt. P. Wks., City Hall, San Francisco, Calif. Bids Apr. 28.

CANADA

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Riverview Investment Corp.**, 192 Levesque Blvd., Pont Viau, Que. Owner Builds. **$4,000,000**. 300-unit HOUSING program with garage, PONT VIAU, (MONTREAL) QUE., 3777 Cote des Neges Rd., Montreal, Que., archt.

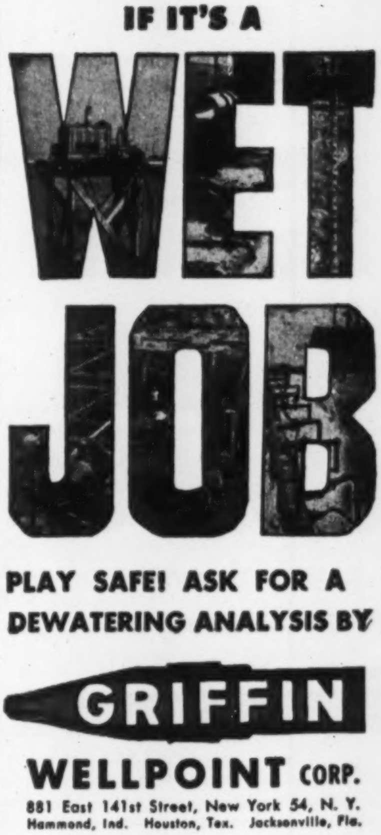
ALASKA

BUILDINGS

LOW BIDS AND CONTRACTS

▲† **S. Patti Constr. Co., Inc.**, and **MacDonald Constr. Co.**, 1340 Admiral Blvd., Kansas City, Mo., LB **$3,987,052**, est. $3,548,386, HOUSING, Inv. 54-43, WHITTIER, ALASKA. U.S. Eng., 4735 E. Marginal Way, Seattle 4, Wash. Bids May 11. CD 4/14.

(Proposal Advertisements see pp 166 to 168)



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May 11, 1954.

UNIT PRICES

Borrow item wins Washington undercrossing

For a reinforced concrete girder undercrossing structure in Lewis County a low bid of $162,894 was submitted to the Washington State Highway Commission by Pakar Const. Co., Chehalis, Wash. This is 6% under the engineer's estimate and also 6% below the second low bid. G. M. Flint, Chehalis, is the project engineer. H. C. Higgins is Acting Director of Highways.

The contractor will build two 36-ft spans and two 46-ft spans, with 15-ft minimum vertical clearance. The underpass will be 167.16 ft long, with 28-ft roadway and 2-ft to 3-ft sidewalks. The project also includes asphaltic concrete approaches on Primary State Highway No. 12.

Prevailing wage rates include: $2.58-$3.31 per hr for skilled labor, $2.335-$3.01 for semi-skilled, $2.25-$2.81 for common labor. Work must be completed by Aug. 26 after 210 calendar days.

All materials will be furnished by the contractor. Rail and highway transportation are available at the job site.

Bidders include:

1C	Pakar Const. Co., Chehalis, Wash	$162,894
2	Troy T. Burnham Co., Seattle, Wash	173,167
4	David Nygren, Seattle, Wash	177,956
EE	G. M. Flint, Chehalis, Wash	172,889

Bids; 1-12-54 Item	Unit	Quantity	Unit Prices 1 C	Unit Prices 2
Clearing	ac	1	$100	$50.00
Grubbing	ac	1	100	50.00
Clear & grub	ls	1	2,500	300
Excavation:				
common incl haul	cy	290	0.65	1.15
com trench incl hl	cy	1,390	0.75	1.15
structural	cy	1,160	3.25	2.00
Com borrow incl hl	cy	59,190	0.55	0.74
Smooth-wheeled power roller	day	18	50.00	60.00
Tamping roller	day	18	60.00	46.00
Pneumatic-tired roller	day	38	50.00	55.00
Mechanical tamper	day	24	70.00	57.50
Finishing rdway—100′	sta	19	8.00	18.50
Water	Mgal	250	2.50	2.25
Grav backfill, fndn	cy	60	5.00	3.00
Cr stone surf top crs f&p	ton	2,640	2.55	2.50
Ballast, f&p	ton	6,400	2.50	2.25
Asph conc pvmt:				
asph cmt MC-3 pr ct	ton	10	60.00	60.00
cl C wearing crs	ton	1,126	10.00	10.00
cl L leveling crs	ton	541	10.00	10.00
RC culv pipe std 36″	lf	124	12.00	11.00
Conc sewer pipe 12″	lf	66	2.45	3.00
21″	lf	12	10.00	10.00
Bit coat CM culv pipe 16 ga, 8″ dia	lf	120	3.00	3.50
Relay pl conc sew pipe,				
12″ dia	lf	168	2.50	3.00
21″ dia	lf	168	7.00	3.00
Beam guard rail	lf	150	4.00	4.00
RC row markers	ea	5	9.00	7.50
RC spot posts	ea	38	14.00	12.50
Hand place riprap	cy	6	40.00	20.00
Adjust MH to grade	ea	5	40.00	40.00
Remove:				
CC pvmt	sy	250	1.00	1.00
CC sdwk	sy	35	1.00	1.00
temp bm gd rl	lf	240	1.00	1.00
timber bridge	ls	1	4,000	1,250
Reset temp bm gd rl	lf	80	3.00	1.50
Bridge				
Exc, struct	cy	220	4.00	3.00
Conc, cl A	cy	360	70.00	75.00
Conc, cl B	cy	70	50.00	75.00

Bids; 1-12-54 Item	Unit	Quan- tity	Unit Prices 1	 2
RC br railing	lf	339	8.00	10.00
Stl reinf bars	lb	115,000	0.105	0.12
Br drains, compl in place	ea	3	$70.00	$100
Furn conc piling	lf	3,600	4.00	4.00
Drive conc piles:				
first 10′	ea	90	55.00	72.00
over 10′	ea	2,655	0.10	0.10
Furn & drive conc test piles	ea	3	600	700

Clearing new section of Maine Turnpike

By bidding low on clearing, the Savin Const. Corp., East Hartford, Conn., won a $1,745,506 contract from the Maine Turnpike Authority to grade and drain 10.585 miles of the Portland to Augusta section. Consulting engineers are Howard, Needles, Tammen & Bergendoff, New York, N. Y.

Savin underbid the second low bidder by 38% and $38,500 on the clearing item. He was 4% lower on borrow, saving the Authority another $22,120. Total difference between the two low bidders was $54,493 or 3%. Seven contractors vied for the job.

Prevailing minimum wages are: $3.35 per hour for operating engineers, $1.75 for skilled labor, $1.50 for semiskilled, $1.25 for common labor. The work site is four miles from the railhead with highway transportation available.

Work on the project started April 1; it must be completed Dec. 1.

Bidders include:

1C	Savin Const. Corp., East Hartford, Conn	$1,745,506
2	Campanella & Cardi, Hillsgrove, R. I.	1,800,000
7	Frank Rossi & Thomas DiCenzo, Gardiner, Me	2,367,460

Bids; 3-4-54 Item	Unit	Quan- tity	Unit Prices 1 C	 2
Field office	ea	2	$2,000	$3,608
Clearing	ac	154	400	650
Removing trees	ea	26	40.00	25.00
Excavation, earth	cy	1,350,000	0.48	0.48
rock	cy	90,000	2.00	2.00
Struct exc, earth	cy	3,100	4.00	1.60
rock	cy	40	10.00	12.00
Drain exc, earth	cy	16,400	1.50	1.60
rock	cy	190	10.00	8.50
Borrow	cy	1,106,000	0.48	0.50
Stripping pits	cy	85,000	0.20	0.20
Overhaul	micy	236,000	0.07	0.07
Channel exc, earth	cy	20,000	1.25	1.30
Perforated ACCMP under-drains, 8″	lf	5,500	2.00	2.20
12″	lf	10,900	3.00	2.65
Drop inlets, A	ea	44	150	145
B	ea	71	140	135
Reinf stl bars	lb	76,300	0.12	0.13
Asb coated CMP:				
12″	lf	1,700	3.00	2.60
18″	lf	680	4.00	4.20
24″	lf	1,500	6.00	6.00
30″	lf	210	8.00	11.00
36″	lf	75	12.00	12.00
RCP:				
12″	lf	4,700	3.50	2.60
18″	lf	1,800	5.00	3.80
24″	lf	710	7.00	6.50
30″	lf	760	8.50	8.00
36″	lf	460	12.00	10.50
42″	lf	150	15.00	14.00
48″	lf	1,020	18.00	16.50
54″	lf	160	23.00	21.00
72″	lf	185	38.00	35.00
Conc in culverts	cy	640	60.00	60.00
Fencing	lf	25,000	0.40	0.45
Riprap, plain	cy	1,500	3.00	6.50
Bit conc surf crs in detours	ton	675	10.00	13.50

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1. The new "***Electronic Witch***" will out-perform and out-last any other pipe finder . . . will give greater accuracy . . . sharper . . . more pronounced indications of buried pipes, metal objects . . . is much less sensitive to outside interference .

2. Fisher's new M-Scope cabinets are made of special moulded unbreakable fiberglas, the very latest word in electronic instrumentation. Won't scratch nor stain. Can't be damaged by water. No more splinters, dents.

3. EVERY new "***Electronic Witch***" contains a super-sensitive leak detector circuit in the receiver. With a few inexpensive accessories you can have a ready-made Leak Detector.

4. AND most startling of all! The new "***Electronic Witch***" COSTS LESS TO OWN—ONLY **$162.50!!!** and LESS TO MAINTAIN!

There are many other features you will fully appreciate when you use this great new M-SCOPE . . . . 50% less "B" battery consumption; elimination of conventional loop antennas and beat oscillators to assure unsurpassed stability; the new Super-Power control for greater depth and tracing range. For more details and facts write for our new "**Electronic Witch**" folder.

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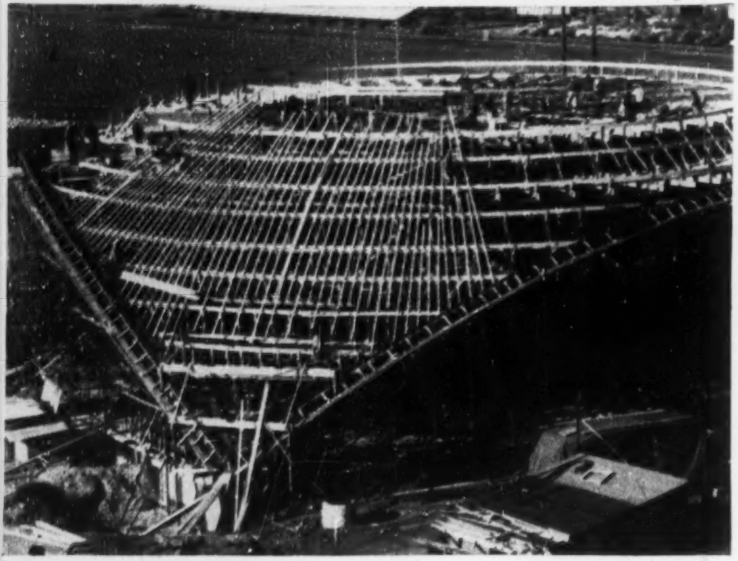
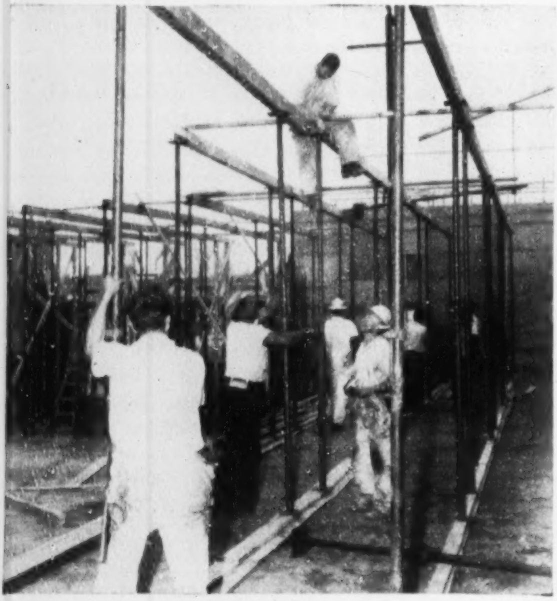
Shoring News in Pictures . . .

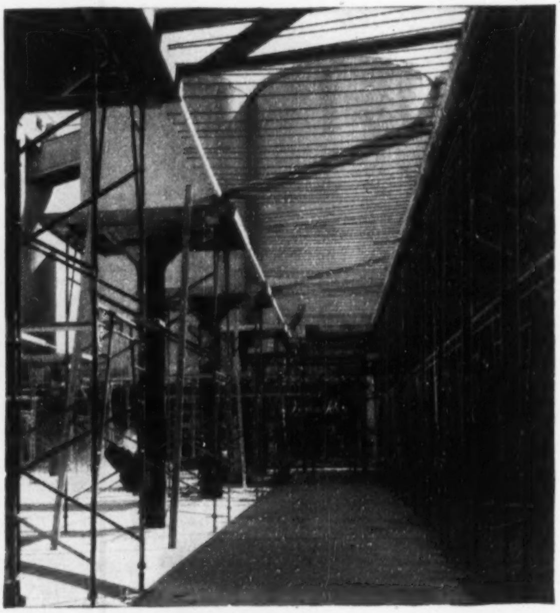


SPHERICAL TRIANGLE—Defying the theory that huge structures must be supported by columns and beams, this unique auditorium at Massachusetts Institute of Technology is a thin-shell concrete dome (1/8th the surface of a sphere) supported on only three slender reaction points. To solve the problem of supporting wood forms and green concrete, George A. Fuller Co. uses an all-steel shoring assembly built-up of 1400 "Trouble Saver" ® Sectional Scaffolding frames. Concrete is 3½" thick on the dome, 5½" at the edge beams and 20" at the three buttresses. Absence of columns will give 1,200 spectators a clear view of all events.

RE-USED 5 TIMES—To shore 37" spandrel beams on 4-story warehouse in Jersey City, N. J., contractor uses 24"-wide "Trouble Saver" Ladder Scaffolds spaced 7' apart. For supporting 10"-12" floor slabs, 5'-wide "Trouble Saver" frames were rented in sufficient quantity to shore one half of one floor, then re-used five times.



'BEST WE'VE EVER USED'—Burton Shores earn highest praise from general contractor C. R. Park, whose first use of these new steel units was on building for Bekins Van & Storage Co., in Pomona, Calif. "They are easier to handle and adjust . . . save many dollars", Mr. Park says. 762 Burton Shores, rented for the job from the Patent Scaffolding Co., were used to support 8½"-thick slab. Here, Shores are being raised by adjusting handle to level of those previously placed while workman sets 4x6 stringers. Shores were spaced 4' apart in both directions. To buy or rent PS Shoring, see the Yellow Pages in your 'phone book for nearest Patent Scaffolding office or representative.



COLUMNS AND PANELS—106 capital columns with drop panels were easily shored with "Trouble Saver" Sectional Scaffolding on this warehouse construction job for L. S. Donaldson Co. in Minneapolis. Watson Construction Co. used four 6'6"-high frames with 20" extension legs and base plates on each column.

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BUSINESS AND FINANCE

608 meant to be profitable, old Senate hearings show

Committee records indicate Congress renewed 608 in 1949 after discussing profit possibilities for builders

Profits made by sponsors or builders of emergency and postwar rental housing under the favorable terms of the now-defunct Section 608 appear to be essentially legitimate. The question of illegality—as distinct from greed—does not arise unless something additional is brought into the picture in the way of collusion with Federal Housing Administration officials or of tax evasion. There are reasonable conclusions to be drawn from the hearings held so far by the Senate Banking Committee, which is investigating the housing "scandals."

Look back at the history of Section 608:

Congress drafted that section and voted several times to extend it for the acknowledged purpose of encouraging private investors to supply apartments for war workers during the war and—more urgently—for returning veterans after the war ended.

This section was added in 1942 to Title VI (war housing insurance) of the National Housing Act. It was amended in 1946, 1948, 1949, and 1951. Congress twice extended 608, to a final termination date of March 1, 1950.

Furthermore, Congress successively increased the authorized dollar volume of insurance mortgages under Title VI—largely to take care of Section 608 insurance. When 608 first took effect, the authorization was for $800 million. By the time 608 expired in 1950, the total had increased to $6,650 million.

In 1950, Congress provided that applications received at FHA field offices through the expiring date, March 1, could be processed for insurance. To take care of these mortgages, the 608 insurance authorization was boosted by $500 million. Through the closing date, there were applications for $4.5 billion of insurance, to cover 612,000 dwelling units. Insurance actually was written for $3.4 billion on 466,000 units.

- **A look at the record**—Congressional hearings of five years ago show clearly how Section 608 was designed to operate as a profit incentive for private builders of apartment projects. For any builder or investor who did not know already the possibilities, the Senate Banking Committee hearing of July 29, 1949, for instance, gave a pretty complete course of instruction on how to make money out of a 608 project.

Appearing before the committee that afternoon were FHA Commissioner Franklin D. Richards and Assistant FHA Commissioner Clyde L. Powell, in charge of rental housing. Here are excerpts, edited and condensed for brevity, of what they and the committee members discussed:

Exploring the costs that could be included in the FHA-approved construction estimate for a 608 project, Sen. Russell Long of Louisiana first settled the fact that a 5% architect's fee was standard. Then he went on—

Sen. Long: Now the 5% builder's fee here (on 608 projects); in my section of the country the usual contractor's fee is 10%.

Mr. Richards: In 608 we break it down into the 5% builder's fee and the overhead, which may run 2% to 3% (allowed in the estimate). It would be 7% to 8%, which is comparable with what we are talking about, at 10% profit.

* * *

Mr. Richards: The actual cost of construction, including the items you have mentioned here, varies from builder to builder. So we try to get what we estimate would be the cost to the typical builder, not to the most efficient or not the poorest builder, but to the typical builder.

Sen. Long: I have a friend who constructed one of these Section 608 projects. He told me that he managed to construct his project for 70% of the estimated cost. Do you think it is possible, even for the most efficient type of builder, to actually construct his project at 70% of the estimated cost?

Mr. Powell: No, I do not think so.

Mr. Richards: I do not think so.

Mr. Powell: I do not see how that is possible because we are right on top of local construction costs. Our figures are on the current market, not on the national market, what it costs in this particular community. We might be off 2% or 3%. I do not think it would be physically possible to be off anything like 30%.

Sen. Long: To begin with, here is your 5% which is allowed as a contractor's fee. That is allowed for his own effort. Actually the man is entitled to compensation for his effort. I would not deny him that for a moment.

Mr. Powell: We expect him to earn that.

Sen. Long: Plus that, here is a fee of, let's say, 4% that he does not actually have to pay out in architect's fees. There is 9% of it.

Mr. Powell: He might save 1% on his overhead.

Sen. Long: If he can save 1% on his overhead, that is 10%, if he can do that under the law. He already has a 100% loan. Is that not true?

Mr. Richards: He has 90% of cost in the way of a mortgage. The other 10% of these items that you have identified here might reasonably be construed to be profit. Therefore, under this act, a builder can get the full reproduction cost of the structure and the land, and leave him his profit as an equity.

Sen. Long: And if the man is a builder himself, and he does not have to pay an architect's fee, in effect, then he could probably, if he is more efficient than just the normal ordinary builder, actually have his structure completed for less than he could borrow on the government-insured loan. Would that not be true?

Mr. Powell: That is possible, it could be done.

Sen. Long: I want to say right here now that frankly I believe this project was intended to be extremely profitable to builders and that the purpose was based on the American tradition that if you want to get a job done, if you will show American businessmen where they can make a hefty profit, they will really get out there and do you a job. That undoubtedly has caused this country to grow the way it has.

But do you know of any other ways where a man by prudence or by care or by any other manner of handling his project might come below or might further reduce his cost in building one of these projects?

Mr. Powell: I do not see how he

(Continued on page 163)

THE LONGER LOOK:

The postwar baby boom, now in ninth year, shows no signs of slackening. That is bullish news for construction

The latest figures on U. S. births are extremely cheering for the construction industry. The estimate for February is 303,000, an all-time record for that month. It is also the tenth consecutive month in which the number of births equaled or exceeded those in the same month of the preceding year.

Baby booms are normal after major wars. But the fact that this one is now rolling into its ninth year has confounded past predictions of population experts. There is considerable promise for future construction activity in the fact that in every year since World War II the number of births has been greater than ever before. A new record has been set in each of the last three years. In 1953, the total figure had reached nearly 4 million.

Figures recently made available by the Bureau of the Census about these postwar babies—and their mothers—suggest that interesting new population trends are developing. If these trends turn out to be more than just temporary postwar phenomena, a lot of ideas about population growth will have to be revised.

• **Younger marriages**—One of the basic changes is that girls have been going up the aisle at an earlier age. This has suggested to some observers that the huge postwar marriage rate represents "borrowing from the future" as well as catching up with marriages postponed from the depression-ridden 1930s.

We won't be able to tell for some time, of course, whether this early average marriage age will be permanent or whether it will start rising again before long. Much will depend upon general economic conditions of the country.

• **Younger mothers**—These earlier postwar marriages have meant early childbearing. The chart (opposite) shows the result: By 1952 women in the age group 20-24 had 63% more children per 1,000 than women who were in the same age group in 1940 had in their families at that time.

• **Bigger families?**—The result of the popularity of early marriage and of young parenthood could mean that a 150-year-old trend toward ever-smaller completed families is being reversed in this country. For marrying young means a longer span of years when childbearing is possible. This is tending to increase the average size of young families as compared with a few years ago.

For instance, women who were in the 45-49 age group in 1952 failed even to replace their own generation. The depression was going on during what should have been their most fruitful years. On the other hand, women aged 30-34 in 1952 should end up with completed families well above replacement needs—an average of 2,500 children per 1,000 women. (About 2,170 children per 1,000 women would be required for replacement.)

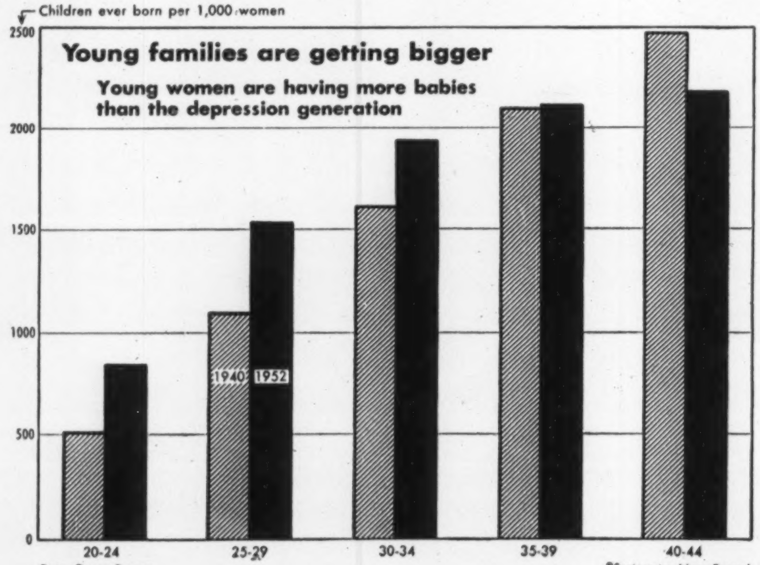
For homebuilders, this means considerable business in enlarging existing homes and building bigger ones to house the bigger families of this current generation of young parents. Indeed, this prospect could offset much of the effect of the decline in formation of new families expected in the later 1950s. It would be extremely good for homebuilders, and indirectly for other sections of the industry, if the baby boom continued a few more years until about 1960. By that time, the big crop of children born in 1941 and later years will start reaching marriage age, creating new families and more construction (ENR Feb. 18, p. 84).

• **Other trends**—The Census Bureau figures also have brought out some other population trends that should prove of interest especially to construction men:

• The widespread U. S. migration from city to suburb does not necessarily mean small families, small homes, and small apartments. Although urban families are traditionally smaller than rural families, the differential between the two types is narrowing. The number of children per urban family is increasing faster than in the average rural family. Living in the suburbs instead of in the city tends to result in an increase in the size of young families.

• There is relatively little difference now between the numbers of children born to women in different income groups. Traditionally, the middle-income and upper-income groups have had fewer children than lower-income groups. There could be great significance in the fact that parents with incomes large enough to back up their desire for more housing space are having bigger families.

• Increasing numbers of young women seem to have found it practicable to have children yet keep on working, although nonworking women are still far more likely to have children. More babies in families with two breadwinners should further strengthen the market for residential construction.



Young families are getting bigger

Young women are having more babies than the depression generation

Data: Census Bureau

©Engineering News-Record

. . . Sec. 608

could, unless our local estimate of the cost of the production of the structures would be far in excess of what it would actually cost him to build.

Sen. John W. Bricker: There have been many instances like that, have there not?

Mr. Powell: Not to my knowledge, sir.

Sen. Bricker: You do not know of any?

Mr. Powell: No, sir.

Sen. Bricker: Have you investigated to find out?

Mr. Powell: We have not made any investigation of any particular project I know of.

Sen. Bricker: Do you not think that would be important?

Mr. Powell: I do not know that we would have any actual right to do so.

Sen. Bricker: It might be important to get your estimates revised.

Mr. Powell: We do get those estimates every 30 days.

Sen. Bricker: I happen to know of something, that is the reason I mention this.

Mr. Powell: Every 30 days we make a check.

Sen. Bricker: I brought this thing up two years ago, the very same thing, and tried to write a protective section into the law. I was not very successful at it because it is a very difficult thing to do, to tell you the truth about it.

Sen. Long: You do not think a man could construct a project, then, even if you include his own profit, for 30% below what the actual estimated cost of the project was?

Mr. Powell: Well, senator, if he did, I would say that our office had made a pretty serious error in estimating the cost of the job. It has never been called to our attention, and I do not see how you could miss an estimated cost on an ordinary housing project of any 30%.

Sen. Long: In no event if a man is honest and he submitted you an honest estimate, in no event are you going to go back and make a cost accounting to see how much he could save and attempt to get some of that back?

Mr. Powell: No. We are not going to accept his estimate if we think it is out of line. We can take our own.

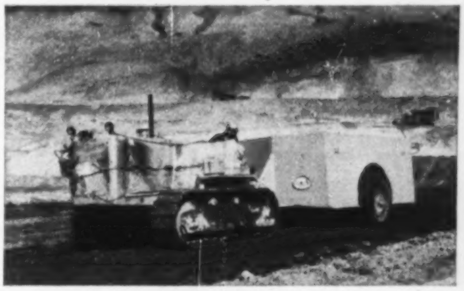
Sen. Bricker: Take a hypothetical case. The only way a man could get back his total investment would be that if he submitted plans, perfectly good plans; you okayed the plans and the cost; his cost was reasonable; you okayed that; he built the building ac-

(*Continued on page 164*)

BROS tip sheet

EQUIPMENT NEWS FROM A FAMOUS NAME IN ROAD MACHINERY

HERE'S HOW ROLL-O-PACTOR* CONTINUES TO REVOLUTIONIZE "BIG JOB" COMPACTION



Patented Bros design equalizes weight distribution over all four wheels on roughest terrain. "Superload" compaction! Roll-O-Pactor* is backed by the entire Bros factory and distributor service organization.

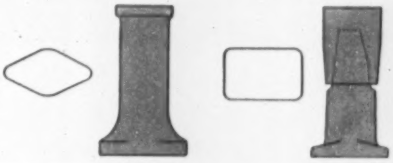
You spread earth in 18″ lifts instead of 6″ lifts, and use a 50-ton Bros Roll-O-Pactor* to compact to greater density with fewer passes. You break the slow compaction bottleneck, and rain doesn't keep you off the job as long as it does with other compaction equipment. Government and private job studies have proved beyond question the value of this Roll-O-Pactor* that others are trying to copy, even under possible patent infringements.

*Bros Roll-O-Pactor is patented in U.S.A., Canada and Mexico.

TWO NEW TAMPER FOOT DESIGNS NOW OFFERED BY BROS

Illustrated at right are the new Bros standard diamond-shaped tamping roller foot and the replaceable "Tamprite" foot. Both of these foot designs are now available on giant Bros "G" Series tamping rollers. Ft. psi range of the "G" series is 260 lbs. to 738 lbs.

Bros cleaner teeth are new, too. They have adjustable and reversible blades which mean that blades last longer and drums stay cleaner because blade contact can be readily adjusted.



Above left is the new Bros diamond-shaped foot with "relief" shank for easier withdrawal from soil. At right is the "Tamprite" foot with removable tip which saves time on replacement and readjustment, and lengthens foot life.

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The dryer drum is 8 ft. long by 30″ diameter, with a drying capacity up to 10 tons per hour. Aggregate may be fed by hand or directly from truck by means of a small chute attached to the tail gate. There is a towing hitch for readily attaching to any standard make truck.

New Spreader Attachment

This spreader attachment, which is optional equipment with the Moto-Patcher, is 8 ft. wide and is fully adjustable to specified grade and crown, insuring a uniformly smooth surface even on irregular pavement.

Bulletin MPD-53 gives complete information on the Moto-Patcher, Dryer and Spreader. See your local H & B distributor or write direct.

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cording to plans, according to standards and subject to your inspection. He is entitled to his full mortgage, and if he built the building for 12½% less than the estimated cost of it, then he would have his pocket money back.

Mr. Powell: That is right.

Sen. Bricker: If he built it for more than 12½% (below) cost, he might have a little extra cash, and there is no way you can prevent it.

Mr. Powell: No, sir.

Sen. Bricker: That is what we tried to do, and I do not see any way under the sun you can do it.

Gap gets narrower

April brings ENR, Dodge figures closer together

ENR contract awards went up in April as compared with last year, while the Dodge series moved down. The two series were unusually far out of phase in the first quarter (ENR Apr. 15, p. 92).

Construction volume as reported by Dodge for April is 3% below April of last year, reflecting sharp drops in heavy construction and a sharp gain in residential work. Dodge's nonresidential building total was down 11% from April 1953. Public work and utilities were down 25%. But this was nearly offset by a 19% gain in residential work, which plays a more important role in the Dodge series than in ENR's.

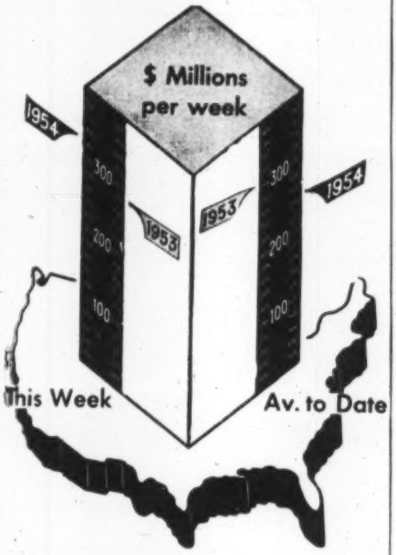
By comparison, ENR's awards in April were down 1% from April 1953. For the first four months, total ENR contract awards are 25% behind the same period last year, after having been 34% behind in the first quarter. The Dodge series is up 8% for the first four months, after having been 13% ahead for the first quarter.

The drop in heavy construction volume reported by Dodge follows the drop in heavy construction awards (as compared with the corresponding month of the previous year) reported by ENR earlier. ENR contract awards include the total value of contracts when they are awarded; Dodge reports dollar volume as work is started.

For example, one reason why Dodge's heavy construction volume dropped this April was that it reported almost $150 million of Atomic Energy Commission work in April 1953, as work started. The last big AEC contract went into ENR's figures in September 1952.

Activity This Week

As reported to ENR
(In millions of dollars)



Amount of contracts let

	This Week	Cumulative 20 wks 1954	1953	% chge
Federal	$22.4	$393.3	$587.7	−33
State and municipal ..	80.5	1,681.8	1,850.7	−9
Total pub...	102.9	2,075.1	2,438.4	−15
Total priv...	227.5	2,999.3	3,600.2	−17
U. S. total..	**$330.4**	**$5,074.4**	**$6,038.6**	**−16**

Contracts by type of work

	This Week	1954	1953	% chge
Waterworks .	$4.7	$87.0	$96.4	−10
Sewerage ...	8.3	144.9	146.1	−1
Bridges	4.0	141.6	232.9	−39
Highways ..	23.0	597.9	608.9	−2
Earthwork, waterways .	4.5	110.5	134.9	−18
Buildings:				
Public, excl. hsg.	38.4	618.7	635.4	−3
Housg., pub.	1.7	70.3	244.4	−71
Housg., priv.	117.7	1,660.1	1,613.2	+3
Commercial	30.3	480.3	388.7	+24
Industrial .	74.9	744.9	1,294.8	−42
Unclassified .	22.9	418.2	642.9	−35
Total	**$330.4**	**$5,074.4**	**$6,038.6**	**−16**

NOTE: Minimum size projects included are: Waterworks and waterway projects, $34,000; other public works, $60,000; industrial buildings, $82,000; other buildings, $300,000.

New capital for construction

(millions of dollars)

	Week of May 13 1954	Cumulative 19 Wks 1954	% chge 1953-54
Corporate securities	$89.5	$1,169.2	−19
State and municipal:			
All except housing	300.1	2,012.5	+52
Housing	...	42.6	−77
Federal loans	3.4	47.7	−5
Federal aid	...	...	...
Total non-federal..	**$393.1**	**$3,272.1**	**+9**
Federal approps:			
In U. S..........	...	...	...
Outside U. S....	...	...	...
Total new capital..	**$393.1**	**$3,272.1**	**+9**

ENR indexes

		Base years = 100 1913	1926	1949
Constr.	**May '54**	**618.69**	**297.40**	**129.70**
cost	Apr '54	615.36	295.80	129.00
Bldg.	**May '54**	**438.69**	**237.14**	**124.70**
cost	Apr '54	437.94	236.74	124.49
Volume	**Apr '54**	**517**	**210**	**149**
	Mar '54	426	173	123

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OFFICIAL PROPOSALS

Bids: June 30, 1954

Construction of Grain Terminal

CONSTRUCTION OF GRAIN STORAGE & HANDLING PLANT

The Corporació de Defensa de Productos Agrícolas, an instrumentality of the Republic of Colombia, S. A., will receive sealed competitive bids at its principal office in Bogotá, Colombia, until 4 P. M. Eastern Standard Time on the 30th day of June, 1954, for the immediate construction of an Import-Export Grain Terminal, incorporating marine handling facilities, etc. at Cartagena, in the Republic of Colombia, S. A.

Formal bidding documents, Plans and Specifications, and General Conditions of the Construction Contracts may be inspected by qualified prospective bidders at the offices of the Consulting Engineers for the Corporación, Drying Plant Engineers, Inc., 1001 Connecticut Avenue, N. W. Washington, D. C. and Carrera 8A, No. 15-43, Piso 11, Bogotá, Colombia, after May 10, 1954.

Persons other than qualified prospective bidders for the construction work in the opinion of the Corporación may obtain copies of the bidding documents upon payment of U. S. 100.00, or if they are Colombian firms, upon payment of Col. $100.00.

The type of construction for the structures will be reinforced concrete, prefabricated steel, or a combination of the two materials. The work will include furnishing all materials, equipment and services for a complete plant, ready to operate, at Cartagena and the work will include pile foundations, dock, marine bulkhead and dredging.

Bids shall be for the total requirements of the project but the Corporación reserves the right to reject any or all bids or to award the work or any divisible part to any one or more bidders.

Interested prospective bidders may address inquiries for further information either to the Corporación or to the Consulting Engineers.

Bids: June 25, 1954

For Sale: Floating Equipment by Panama Canal Co.

Sealed bids for the purchase of U. S. WOLCOTT, U. S. LIMON, and other items of barges, launches, and quarterboat, offered for sale under Invitation 80 by Panama Canal Company will be received until 10:30 A.M., June 25, 1954 and at that time publicly opened in the office of Procurement Officer, Panama Canal Company, 24 State Street, New York 4, N. Y.

The U. S. WOLCOTT, originally a Coast Guard cutter, rebuilt in 1938, was re-engined in 1947 with 2—F-M, 2 cycle, 6 cylinder, 180 HP diesel engines and 1 Superior 6 cylinder, 4 cycle, 60 HP engine. It is riveted steel construction and the hull is in excellent condition. The overall length is 100 feet; beam 23 feet; draft 8 feet, 6 inches; displacement 210 long tons. It is equipped with 2—10 KW generator sets, 1 Brunner ice machine and a completely furnished galley with oil burning galley range, stainless steel walk-in refrigerator, tile deck.

The luxurious appointments consist of walnut veneer paneled dining salon, owner's cabin and lounge, private cabin with bath forward for owner, 3 double cabins for passengers, 1 master's cabin aft of pilot house, 1 chief engineer's cabin, crew space for 4 persons.

The general overall condition is better now than at the time of our acquisition in 1951.

Here is a very low cost fire and police boat with excellent living quarters practically new engines, and ample auxiliary power. This boat is also suitable for use as a tug boat in waters where the current and tide are less than 4 knots.

With minor changes it could be adapted to sport finishing service. The third screw could be a fuel saver during trolling.

The U. S. LIMON was built in 1942. Welded steel construction, overall length 100 feet; beam 25 feet, 3¼ inches; mean draft 10 feet, 10 inches; displacement 390 long tons. Main engine 6 cylinder F-M 1050 HP direct drive to propeller; Appointments: 2 cabins, crew space for 10. Galley: standard for tug boats. Hull is in excellent condition. This boat is suitable for use as a tug boat or harbor tow boat.

Details concerning these ships and the floating equipment offered under this invitation may be obtained along with bid forms, by application to Procurement Officer, Panama Canal Company, 24 State Street, New York 4, N. Y.

OFFICIAL PROPOSALS

PROCUREMENT DEPARTMENT, CITY OF PHILADELPHIA. Sealed proposals will will be received in Room 313, City Hall Annex until 2:30 P.M., D.S.T. on Wednesday June 9, 1954 and publicly opened at that time in Room 313 City Hall Annex for furnishing all labor and materials necessary to perform and complete the Riverview Extension Project—Bid No. 4565 General Construction; Bid No. 4566 Plumbing and Drainage; Bid No. 4567 Heating and Ventilating; Bid No. 4568 Electrical; Bid No. 4569 Kitchen and Cafeteria Equipment; Bid No. 4572 Elevators. Specifications, form of poropsal and pre-qualification questionnaire may be obtained at the Department of Public Property, Office of the City Architect, 830 City Hall Annex. A deposit of $50.00 cash or certified check will be required from those taking out each copy of specifications and plans. This sum will be refunded upon return of said specifications and plans in an undamaged condition within ten days after bids are received. Notice: No bid for this work will be received unless the Qualification of Bidders Questionnaire form furnished by the Department of Public Property, properly filled out with all questions fully answered, is filed with the City Architect, 830 City Hall Annex, at least one week before the date set for opening bids, and at the same time the contractor shall furnish satisfactory proof that he is able to complete his work within the time specified. The forms of contract and bonds may be obtained at Room 715 City Hall Annex.

A. ALBERT CHERASHORE,
Procurement Commissioner.

Bids: June 22, 1954

New Jersey Turnpike Authority

CONTRACT NO. N-9

Proposals are invited for Contract No. N-9 which involves the construction of the superstructure steelwork for the Newark Viaduct in the City of Newark, Essex County, New Jersey, all in connection with the construction of the Newark Bay-Hudson County Extension of the New Jersey Turnpike.

The principal items of work include:

Structural Steel	......13,800,000 Lbs.
Furnishing Metal Railing	..7,125 Lin. Ft.

Proposals will be received at the New Jersey Turnpike Authority, Administration Building, New Brunswick, New Jersey, until 11:00 o'clock Eastern Daylight Saving Time on the morning of June 22, 1954, at which time and place said proposals will be publicly opened and read.

The receipt and opening of proposals are subject to proper prequalification of the bidder in accordance with the regulations adopted by the New Jersey Turnpike Authority. Bidders must also submit with their proposal a revised financial statement and a statement of plant and equipment.

Contract documents may be examined during office hours after May 20, 1954, at the office of the Authority and at the office of the Consulting Engineers, Howard, Needles, Tammen & Bergendoff, 55 Liberty Street, New York 5, New York. Contract documents will be furnished upon deposit of Fifteen Dollars ($15.00) for each set, upon application to the Authority. The deposit will be refunded if the contract documents are returned in good condition to the Authority within fifteen (15) days after the receipt of proposals.

NEW JERSEY TURNPIKE AUTHORITY
May 20, 1954 Paul L. Troast, Chairman

Read the Official
Proposal Columns of
ENGINEERING NEWS-RECORD
This Week and Every Week

OFFICIAL PROPOSALS

Bids: June 15, 1954

Construction of Steel Pipe Lines

City of Richmond, Virginia

Sealed Proposals will be received at the office of the City Purchasing Agent, 4th floor, Mosque Building, Laurel and Main Streets, Richmond, Virginia, until but not later than 11 o'clock A.M., E.S.T. June 15, 1954, at which time they will be publicly opened and read aloud, for the following work which may be awarded in whole or in part:

Location: From Brander Street on the south bank, north of the proposed sewage treatment plant site, under the James River to a location near the City Lock, in the City of Richmond, Virginia.

Type of Work: The work to be done is part of the Sewage Disposal Project, is entitled "Division A—City Lock River Crossing", and comprises the construction of two parallel 66-inch subaqueous reinforced concrete or steel pipe lines, totalling approximately 2,100 linear feet, under a channel approximately 7-feet deep.

The Proposal must be submitted on the proposal forms included in the Contract Documents.

Each Proposal must be accompanied by a certified or cashier's check made payable to the City of Richmond, equal to 5% of the amount of the Proposal, or bid bond equal to 6% of the amount of the Proposal, or be covered by an annual bid bond in the amount of at least 6% of the Proposal.

The Proposal Guaranty is required as an evidence of good faith and as a guaranty that, if the Proposal of bidder is accepted, the bidder will enter into the formal written Contract and furnish satisfactory Performance Bond. Check will be forfeited or bid bond will become due and payable if the bidder whose Proposal is accepted fails to furnish the required Performance Bond, or fails to execute a formal written Contract. Check of successful bidder will be returned after the Contract is executed.

The Bureau of Purchases reserves the right to waive any informality in bids.

The Contract may be awarded by the Purchasing Agent to the lowest responsible bidder, who shall be determined in accordance with rules and regulations governing purchases or contracts adopted and established by the Council and in accordance with and pursuant to sections 5.09, 5.11 and 12.07 of the City Charter.

The City Council shall have the power to authorize the Purchasing Agent to reject any or all bids, to re-advertise for bids, or to make the purchase or contract in the open market either after the rejection of all bids or before competitive bids have been requested.

The unit prices bid will be carefully examined and compared with current values before recommending the award of the Contract. If in the opinion of the Director the unit prices submitted are substantially over or under accepted current values, it will be deemed sufficient reason to recommend rejection of the bid, and further to recommend the award of the Contract to another responsible bidder. In case of error in the extension of a price in the bid, the unit price shall govern:

Attention is directed to Chapter 7 of Title 54 of the Code of Virginia of 1950. The act requires all contractors and subcontractors bidding on any project where the cost of the undertaking of the bidder is $20,000.00 or more, to register with and obtain a certificate from the State Registration Board for Contractors. Bids from contractors not complying with this law will not be considered. Anyone bidding as a general contractor whose bid includes sub bids amounting separately to $20,000.00 or more is required to obtain evidence from such subcontractors that they have complied with the law.

Any contractor submitting a bid on this project amounting to $20,000.00 or more, must insert the following statement in his bid over his signature: "Registered as a contractor under Chapter 7 of Title 54 of the Code of Virginia of 1950. Certificate No. ...., 19....".

Bidders must enclose with their Proposals, in a separate sealed envelope, complete information as to experience, equipment and financial condition on the form provided. Failure to submit this statement will constitute basis for rejection of the bid.

The Proposal, Instructions to Bidders, Contract, Performance Bond, Instructions to the Contractor, Specifications, Plans, and other Contract Documents may be examined at the office of the Director of the Department of Public Works, 217 Governor Street, Richmond, Virginia, and at the office of Greeley and Hansen, Engineers, 220 South State Street, Chicago 4, Illinois. Copies of the Contract Documents may be obtained from the Director or the Engineers upon deposit of Twenty-five Dollars for each set, to be refunded upon the return of such set in good condition within 10 days after the opening of bids.

The Director reserves and shall have the right before award of contract to determine which of the two alternate pipe materials will be selected for Division A—City Lock River Crossing, and the award of contract will be made by the Bureau of Purchases to a responsible bidder based upon the type of material selected.

It shall be understood that all documents referred to in this Notice to Bidders shall be carefully examined and read and are all hereby made a part of the Proposal.

J. W. HUFFMAN,
City Purchasing Agent

Bids: May 25, 1954

Contract 430

ELECTRICAL CONTROL EQUIPMENT, ETC.

SEALED BIDS will be received by the Board of Water Supply, at its offices, thirteenth floor, 120 Wall Street, New York City, until 10:00 A.M. Eastern Standard Time, on Tuesday, May 25, 1954, for Contract 430, for furnishing, testing and delivering electrical control equipment, complete, with all necessary appurtenances, for the operation of the motor-operated valves of the Neversink intake and outlet chambers, the East Delaware outlet chamber and the Downsville release water chamber, of the Delaware system, all as set forth in the specifications.

No bid will be received and deposited unless accompanied by a certified check upon a National or State bank, drawn and made payable to the order of the Comptroller of The City of New York, in the amount of two thousand dollars ($2,000.00) for the proper execution of the contract.

At the above place and time the bids will be publicly opened and read. Pamphlets containing information for bidders, forms of bid and contract, specifications, contract drawings, requirements as to surety, etc., can be obtained in Room 1316 at the above address, upon application in person or by mail, by depositing the sum of five dollars ($5.00) in cash or its equivalent for each pamphlet. Within 30 days following the award of contract or rejection of bids, the full amount of such deposit will be refunded for each pamphlet submitted as a bid and a refund of four dollars ($4.00) will be made for each other pamphlet returned in acceptable condition. For further particulars, apply at the office of the Chief Engineer at the above address.

IRVING V. A. HUIE, President, EDWARD C. MAGUIRE, HERBERT M. ROSENBERG, Commissioners, Board of Water Supply; BETTY COHEN, Acting Secretary.

Bids: June 3, 1954

Philadelphia, Penna. Procurement Department Water Department

Sealed proposals will be received in Room 313, City Hall Annex, until 2:30 P.M., D.S.T., Thursday, June 3, 1954, and opened at that time in Room 313, City Hall Annex, Philadelphia, Pennsylvania, for BID NO. 2176—CONTRACT NO. 185-W.

SEDIMENTATION BASINS AND EQUIPMENT AT TORRESDALE FILTER PLANT

DESCRIPTION OF WORK

The work covered by this bid consists of furnishing all labor, materials, equipment and appurtenances for constructing four (4) slow mixing basins, four (4) sedimentation basins, all interconnecting drains and channels, and furnishing and installing slow mixing and cleaning equipment. The work will include all excavation, back filling, embankment and grading; under drainage systems; concrete; reinforcing; water proofing; baffles and stop plans; all cast iron pipe and fittings; gate valves, sluice gates; manholes; railings; miscellaneous piping and valves; miscellaneous iron and steel; and other appurtenant work and equipment.

Proposal forms, specifications, questionnaires and blueprints may be obtained in Room 1131, City Hall Annex. A deposit of Twenty-five Dollars ($25.00) in cash or certified check is required for each set of blueprints and specifications. This deposit will be refunded upon the return of the specifications and blueprints, unmarked and in undamaged condition within ten (10) days after the bids are received.

No bids will be received unless bidder is qualified by the Procurement Commissioner. The questionnaire form with all questions fully answered must be filed with the Water Commissioner, 1106 City Hall Annex, Philadelphia, Pennsylvania, at least one (1) week prior to the date of opening bids. Each proposal must be accompanied by security in form and amount as set forth in the proposal.

Bids: June 15, 1954

River Intake & Pumping Station; Water Treatment Plant; Water Supply Line

Correction of Contracts I and II Price per set

1. SEALED BIDS for furnishing all materials and equipment and doing all work required for the construction of the following at WINCHESTER, VIRGINIA, will be received by the Common Council in Council Chambers, City Hall, Winchester, Virginia, until 2:00 P.M. on June 15, 1954, and there publicly opened and read immediately thereafter:

CONTRACT I. River Intake Works & Raw Water Pumping Station
CONTRACT II. Water Treatment Plant
CONTRACT III-A. 24-Inch Supply Line (Section A)
CONTRACT III-B. 24-Inch Supply Line (Section B)

2. The principal items of work will include the following:

CONTRACT I: Approximately 5,000 cu. yds. of excavation; 800 cu. yds. concrete (including 160 foot long sill across the Shenandoah River); 570 feet of 36" intake line; 1200 feet of 24-inch force main; 25 tons of C.I. pipe and fittings; water screen, pumping equipment, valves, sluice gates, superstructure work, electrical work and miscellaneous equipment.

CONTRACT II: Approximately 14,500 cu. yds. of excavation; 2900 cu. yds. of concrete; 2650 feet of 24-inch force main; 140 tons of C.I. pipe and fittings; valves, sluice gates, superstructure work, electrical work, pumps and motors; filter media, equipment and accessories for six 20 x 24 feet rapid sand filters, and miscellaneous equipment.

CONTRACT III-A: Approximately 39,000 feet of 24-inch supply line, and miscellaneous valves, fittings and appurtenances.

CONTRACT III-B: Approximately 42,000 feet of 24-inch and 3,600 feet of 12-inch supply line, and miscellaneous valves, fittings and appurtenances.

3. Copies of Plans and Specifications, Information For Bidders, Bid Forms and other bidding and contract documents may be examined at the City Manager's Office, City Hall, Winchester; at Dodge Reports, 900 F St., N.W., Washington, D.C., and examined or obtained at the Office of ALEXANDER POTTER ASSOCIATES, CONSULTING ENGINEERS, 50 CHURCH STREET, NEW YORK 7, N. Y. upon the following Deposits:

CONTRACT I: Fifty Dollars ($50.00) Per Set
CONTRACT II: Eighty-Five Dollars ($85.00) Per Set
CONTRACT III-A & CONTRACT III-B Forty Dollars ($40.00) Per Set for Both Contracts

Full refund will be made to actual bidders for return of One (1) Set, in good condition, within two weeks after closing date for receipt of bids; refund for return of all other sets, in good condition, WITHIN THE SAME PERIOD, will be fifty (50%) percent of the deposit. No refund will be made for return of documents in poor condition or later than the two week period stipulated.

4. All bids must be on the form contained in the Contract and Specifications.

5. Contractors, whether resident or nonresident in Virginia will be required to show evidence of a certificate of registration as required by Chapter 7 of Title 54 of the Code of Virginia before their bids will be considered, if the bid is $20,000 or more.

6. All bids must be accompanied by a certified check or acceptable bidder's bond in an amount of not less than Five Per Cent (5%) of the amount of the bid, made payable to the City Treasurer, as bid security.

7. The successful bidder will be required to furnish a Performance Bond conditioned upon the faithful performance of the Contract and upon payment of all persons supplying labor and furnishing materials on the construction of the work.

8. No bidder may withdraw his bid within Thirty (30) Days after actual date of opening thereof.

9. The Common Council of Winchester, reserves the right to reject any or all bids, and to waive any informality in the bid.

CITY OF WINCHESTER, VIRGINIA
By: S. LEE GRANT, CITY MANAGER
Dated: May 1, 1954.

OFFICIAL PROPOSALS

Bids: June 11, 1954

Construction of Water Supply Main

LEGAL NOTICE

SEALED PROPOSALS will be received at the office of the DIRECTOR OF PUBLIC SERVICE, Room 203, MUNICIPAL BUILDING, AKRON, OHIO, until 12 o'clock noon (Eastern Standard Time), or 1 p.m. (Eastern Daylight Savings Time), on June 11, 1954 for 48-INCH WATER SUPPLY MAIN.

The contract involves the furnishing and installing of approximately 33,500 lineal feet of 48-inch steel or prestressed concrete cylinder water main in Monroe Falls-Kent Road, and in private right-of-way in Munroe Falls, Cuyahoga Falls and Tallmadge, and approximately 6,700 lineal feet of 24-inch cast iron main in Thomas Road and Brittain Road.

Copies of the contract drawings, specifications and forms of proposal are on file and may be seen at the office of the Department of Public Service, the Bureau of Water and Sewerage, Room 404, Municipal Building Akron, Ohio, or at the office of Havens and Emerson, Consulting Engineers, 640 Leader Building, Cleveland 14, Ohio.

Full sets of the drawings, specifications and proposal forms may be obtained from the Bureau of Water and Sewerage, Room 404, Municipal Building, Akron, Ohio, by making a deposit of One Hundred Dollars ($100.00). This deposit will be refunded in full to all those who submit a formal proposal to the Director of Public Service. All others who take out plans and specifications will be refunded the deposit in full provided all documents are returned prepaid to the City in good condition within fifteen (15) calendar days after the date for receiving proposals. Copies of the specifications may be obtained by making a deposit of Fifteen Dollars ($15.00) which will be refunded upon return of the specifications in good condition within fifteen (15) calendar days of the date for receiving proposals. Individual sheets of the contract drawings may be purchased at Two Dollars ($2.00) per sheet but are not returnable nor will the purchase price be refunded.

Each proposal must contain the full name or names of the party or parties making the same and of all persons interested therein. Each proposal must be accompanied by a certified or cashier's check on a solvent bank, and made payable to the City of Akron in the sum of Twenty-Five Thousand Dollars ($25,000). The bid check will be a guarantee that if the proposal be accepted, a contract will be entered into and its performance secured by the required bond; and in default thereof, said check and the amount represented thereby will be forfeited to the City as liquidated damages.

Proposals must be accompanied by the affidavit as to interested parties, and, in the case of corporations not chartered in Ohio, by proper certificate that such corporation is authorized to do business in Ohio.

Bidders must use the printed forms, as none other will be accepted.

The Director of Public Service reserves the right to reject any or all bids, to waive any informalities in the bids received, and to accept any bid which is deemed most favorable to the City of Akron, Ohio.

THE CITY OF AKRON, OHIO
By: Leo G. Walter
Director of Public Service

Bids: See Contents

NOTICE TO BIDDERS

Sealed bids will be received by the Upper Moreland-Hatboro Joint Sewer Authority, Montgomery County, Pennsylvania, at the office of the Secretary, 117 Park Avenue, Willow Grove, Pennsylvania for the construction of improvements to the Hatboro-Upper Moreland Sewage Treatment Plant, the construction of approximately 7.0 miles of intercepting sewers and the construction of approximately 40.2 miles of branch sanitary sewers, until the time and date set forth in the following schedule:

Contracts for Sewage Treatment Plant

	8 P. M. E. D. S. T.
1-A — General, Structural and Exterior Pipe Lines	June 30, 1954
1-B — Mechanical Equipment, Interior Pipe Work	June 30, 1954
1-C — Heating and Ventilating	June 30, 1954
1-D — Plumbing	June 30, 1954
1-E — Electrical	June 30, 1954

Contracts for Interceptor Sewers

2 — Upper Moreland—West Interceptor	June 9, 1954
3 — Upper Moreland—Northwest Interceptor	June 9, 1954
4 — Upper Moreland and Hatboro—Hatboro and Southwest Interceptors	June 9, 1954
5 — Upper Moreland and Hatboro—Hatboro, Gardens and Fern Village Interceptors	June 9, 1954

Contracts for Branch Sewers

6 — Upper Moreland Township	June 16, 1954
7 — Upper Moreland Township	June 16, 1954
8 — Upper Moreland Township	June 16, 1954
9 — Upper Moreland and Hatboro	June 16, 1954
10 — Upper Moreland and Hatboro	June 23, 1954
11 — Upper Moreland and Hatboro	June 23. 1954
12 — Upper Moreland Township	June 23 ,1954

Bids will be opened and read publicly at the time and place stated above, but no bid shall be allowed to be withdrawn for a period of ninety (90) days thereafter.

Plans, specifications and contract documents may be seen and obtained at the office of George B. Mebus, Inc., Consulting Engineers, Northwestern National Bank Building, Glenside, Pennsylvania.

A deposit of $35.00 will be required for each set of plans and specifications for the Sewage Treatment Plant contracts and a deposit of $30.00 will be required for each set of plans and specifications for the Interceptor and Branch Sewer contracts.

There will be a refund of $20.00 for the return of complete sets of plans and specifications, in good condition, if received in the Engineer's office by 5 P.M.:

For Contracts 1-A, 1-B, 1-C, 1-D, 1-E ....July 6, 1954
For Contracts #2, #3, #4, #5 June 14, 1954
For Contracts #6, #7, #8, #9 June 21, 1954
For Contracts #10, #11, #12 June 28, 1954

A certified check or bid bond approved by the Authority in the amount of 5% of the amount of the total bid tendered, made payable to the Upper Moreland-Hatboro Joint Sewer Authority, shall accompany each bid tendered. The certified checks or bid bonds of all but the three low bidders, will be returned within forty-eight hours after the award of the contract. The certified checks or bid bonds of the three low bidders, will be returned upon the execution of the contract.

Bids shall be submitted, bound in the specifications in a sealed envelope addressed to the Upper Moreland-Hatboro Joint Sewer Authority and shall be plainly marked showing the contract/s for which bids are submitted.

The Authority reserves the right to reject any or all bids and waive informalities or take such other action that it may deem to be in the best interest of the Authority, and as may be permitted by law.

Upper Moreland-Hatboro Joint Sewer Au
Upper Moreland-Hatboro
Joint Sewer Authority
By Paul Clayton, Chairman

Bids: May 28, 1954

Contracts No. 218, No. 218A and No. 218B

MAIN TURNPIKE AUTHORITY
MAINE TURNPIKE

Section 2—Portland to Augusta
(Augusta Extension)

Sealed Proposals will be received by the Maine Turnpike Authority for:

BRIDGES

at the offices of the Authority, 17 Bishop Street, Portland, Maine until 10:00 A.M., Eastern Standard Time, on May 28, 1954 at which time and place the Proposals will be publicly opened and read.

The work will be let either (a) under a single contract—Contract 218 which includes the construction of thirteen bridges along the route of the Turnpike Extension between Mile 42 in the City of South Portland and Mile 50 in the City of Portland, and along the routes of the South Portland Connection and the Falmouth Spur, or (b under two separate contracts, Contract No. 218A which includes seven of the above mentioned thirteen bridges, and Contract 218B which includes the remaining six bridges. Such bridge construction will include the erection of the steel superstructures, which will be fabricated and delivered F.O.B. cars at Portland, Maine, by others.

The principal items of work for Contracts Nos. 218A, 218B and 218 include:

	Contract No.218A	Contract No. 218B	Contract No. 218
Structural Excavation-Earth, Cubic Yards	4,216	5,040	9,256
Reinforcing Steel Bars, Pounds	804,178	744,712	1,548,890
Concrete in Piers and Abutments, Cubic Yards	3,186	4,071	7,257
Concrete in Superstructures, Cubic Yards	2,270	1,840	4,110
Driving Steel H-Piles, Linear Feet	26,670	13,115	39,785
Cast-In-Place Concrete Piles, Linear Feet	....	25,630	25,630
Erection of Steel Structures, Pounds	2,306,742	2,053,285	4,360,027
Metal Handrail on Concrete Parapets, Linear Feet	2,488	1,678	4,166

Plans and contract documents may be examined by prospective bidders during regular office hours at the offices of the Authority at the above address and at the offices of the Consulting Engineers, Howard, Needles, Tammen & Bergendoff, 55 Liberty Street, New York 5, N. Y., and may be obtained from the Authority, 17 Bishop Street, Portland, Maine, upon payment of Thirty-Five Dollars ($35.00) for each set of Contract No. 218 covering the entire Project. The Plans and contract documents need not be returned and the payment will not be refunded. Checks shall be made payable to Howard, Needles, Tammen & Bergendoff.

Proposals must be accompanied by a certified or cashier's check payable to the Maine Turnpike Authority in an amount not less than five per cent (5%) of the Total amount in the Proposal but not less than $500.00 nor more than $200,000.00.

If a bidder submits a Proposal for Contract No. 218, as well as a Proposal for Contract No. 218A and/or Contract No. 218B, one check based on the Total Amount in the Proposal for Contract No. 218 will be sufficient.

Proposals must be made upon the Proposal forms furnished separately by the Authority with the contract documents and must be enclosed in the sealed special addressed envelopes provided therefor bearing the name and address of the bidder and the number of the Contract on the outside.

Before the award of the Contract, any bidder may be required to show that he has the necessary facilities, experience, ability and financial resources to perform the work within the time required and to the satisfaction of the Authority.

The Bidder, to whom a Contract is awarded, will be required to furnish a Surety Corporation Bond, satisfactory to the Authority, on the standard Contract Bond form of the Authority, for a sum not less than the Total Amiunt of the Proposal.

The Authority reserves the unqualified right to reject all Proposals or to accept that Proposal which in its sole judgment will under all circumstances serve its best interests. The Contract will be awarded or Proposals rejected within thirty days after the date of opening Proposals(except that in the event of default by a successful bidder the Authority reserves the right to accept the Proposal of any other bidder within twenty days after such default.

MAINE TURNPIKE AUTHORITY
Paul C. Thurston, Chairman
Portland, Maine
May 11, 1954

U. S. Government

BIDS FOR CONSTRUCTION OF STEEL OIL BARGES—Memphis District, Corps of Engineers, U. S. Army, P. O. Box 97, Memphis 1, Tenn. Sealed bids will be received at this office until 11:00 a.m., C.S.T., 10 June 1954, and then publicly opened for construction of six steel oil barges. Information on request.

CONTRACTORS
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THIS SECTION
for New Projects

Publish your announcements thru the "Proposal Section" of Engineering News-Record and get their bids.

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PROPOSALS, $1.80 a line an insertion.

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The advertising rate is $20.50 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.

AN ADVERTISING INCH is measured ⅞ inch vertically on one column, 3 columns—30 inches —to a page. **E.N.R.**

Send NEW ADVERTISEMENTS: To New York Office W. 42nd St., N. Y. 36 for June 3rd issue closing May 21st

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IMPORTANT TEACHING POSITIONS OPEN IN ISRAEL

Technion, Israel Institute of Technology, in Haifa, Israel, proposes to appoint:

- **Professor of Hydraulic and/or Sanitary Engineering;**
- **Professor and/or Associate Professor of Structural Engineering;**
- **Professor of Mathematics;**
- **Profesor of Geology;**
- **Professor of Electrical Power Engineering;**
- **Professor and Associate Professor or Senior Lecturer in Metallurgy**

Applicants should have first-rate professional and academic qualifications, be willing to integrate themselves into the life of the country and, in due course, to teach in Hebrew.

Applications with full details should be sent in duplicate, for transmission to Haifa, to the:

AMERICAN TECHNION SOCIETY
1000 Fifth Ave. New York 28, N. Y.

WANTED

GRADUATE CIVIL ENGINEER

The City of Marysville, Michigan invites employment applications from Graduate Civil Engineers until Wednesday May 26, 1954 at 3:00 P. M. EST in the City Hall, 23 Huron Blvd., Marysville, Michigan. Address letters of application stating qualifications, experience and salary desired to

CITY MANAGER
City Hall, Marysville, Michigan

WANTED

CONSTRUCTION SUPERINTENDENT

With Engineering background to take charge of a Prestress Concrete operation. This is no desk job, must be willing to work.

P-2611, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

WANTED

Experienced Superintendent of Construction for Architectural Office. Experience in pile driving and steel erection desirable. Must be good transit operator. Civil or Architectural Engineer. Also experienced Superintendent of Mechanical Trades.

Apply University Architect's Office,
Brown Hall, The Ohio State University
Columbus 10, Ohio

ESTIMATOR
STRUCTURAL STEEL

Experienced in estimating & closing contracts for fabricated & erected structural steel, for all type buildings; reputable firm in metropolitan N. Y. area, salary open, excellent oppty.

P-2762, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

REPLIES (Box No.): Address to office nearest you
NEW YORK: 330 W. 42nd St. (36)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

POSITIONS VACANT

BRIDGE DESIGNERS and draftsmen wanted. State education, experience, and salary desired in reply. T. B. Gunter, Jr., Bridge Engineer. State Highway and Public Works Commission, Raleigh, North Carolina.

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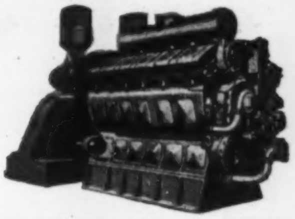

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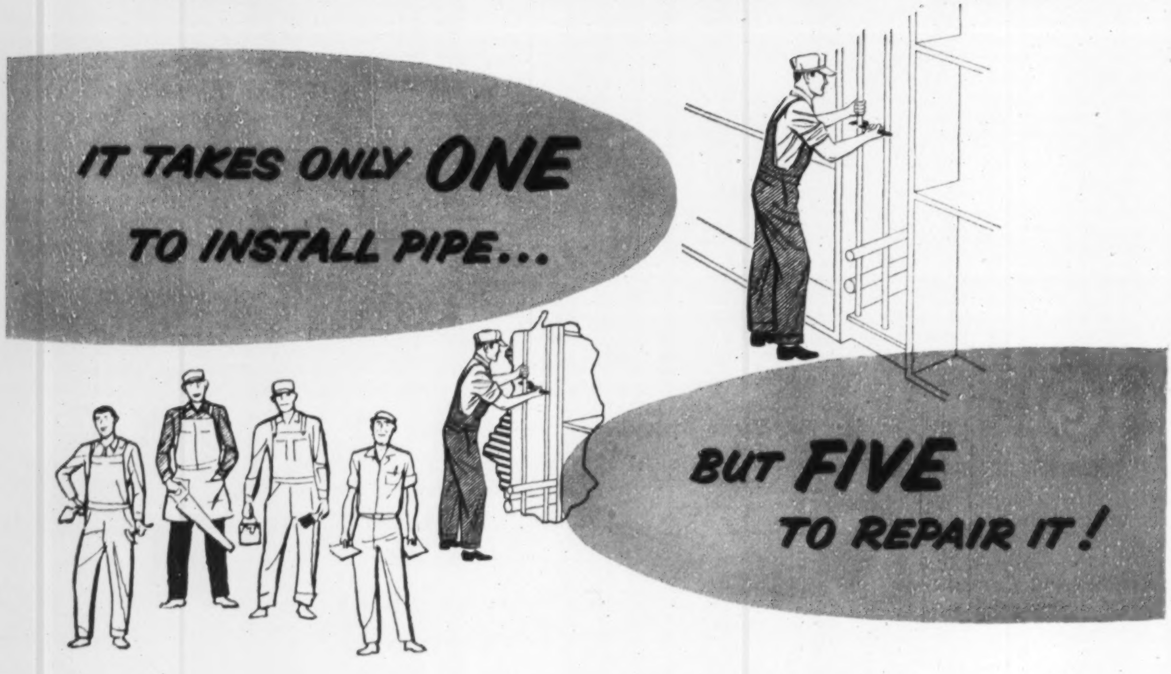
Here's why CORROSION COSTS YOU MORE than WROUGHT IRON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One of the most convincing demonstrations of the economy of using *durable* material is a pipe repair job where low-first-cost material has failed—and is being replaced.

The original installation had been quickly made by plumbers. But the replacement calls for hours of work by as many as five crafts: plumber, mason, plasterer, carpenter, painter. Often, maintenance is billed at overtime rates. And this is only part of the cost story. Production slow-down, disrupted routine may amount to far more than the maintenance charges.

Fortunately there's an answer to pipe durability in corrosive services—Byers Wrought Iron pipe. In literally thousands of applications where corrosion is a threat, the use of this material has proved the soundest kind of economy move.

The next time you specify or approve pipe, you'll find it profitable to investigate the durability records of wrought iron.

Our bulletin, "The ABC's of Wrought Iron," gives the what, why and where of this material. Write for a copy.

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Remember—
the pipe that lasts
the longest
costs the least!

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Insist on Byers
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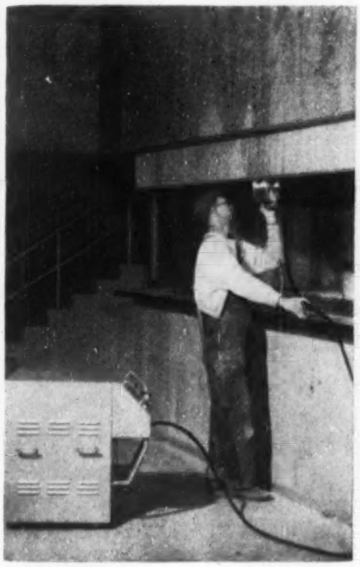

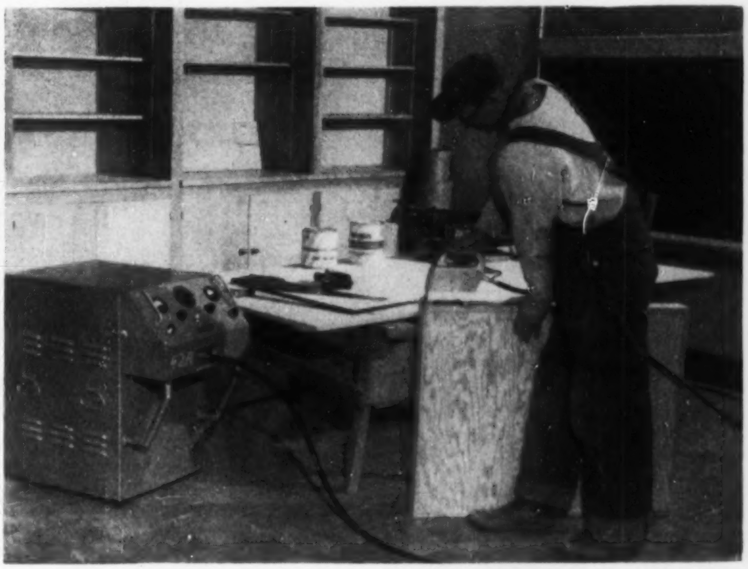

Portable electronic glue gun replaces nailing

Glue and an electronic gun that is reported to be faster, lighter and easier to handle than a hammer may replace nailing in a great variety of building operations.

The process has been used successfully in the assembly of interior trim cabinets, shelving, counters and in applying wall paneling for Milwaukee's new Marquette University Library and the St. Pius School and Gymnasium. Builders on the job were the Milwaukee firm of Gebhard-Berghammer, and according to Jerome Gebhard, president of the organization, "electronic gluing compares very favorable with conventional hammer and nail methods in speed. In finished appearance, strength and overall cost, it offers definite advantages."

New in the construction industry, electronic gluing is, however, fairly well accepted in furniture plants and cabinet shops. Equipment used in such installations is usually large and heavy and thoroughly impracticable for the building industry, but a new portable unit, called the BondOtherm, has been developed which promises to extend the practicability of the process.

The BondOtherm consists of two units—a high-frequency RF generator and a cable-linked gun.

The glue gun weighs only 1¾ lb and is handled very much like an electric iron. It is connected to the generator by a 15-ft cable to afford the operator ample freedom of movement. A 30-ft cable is also available if necessary.

The generator is composed of three basic and complete assemblies—each of which can be replaced without disconnecting wires or electrical assemblies. Local salesmen carry replacement assemblies and will take care of any replacement so as to eliminate downtime due to component failure. The manufacturer guarantees the workmanship in the equipment and supplies a tube warranty of 1,000 hrs.

The generator is housed in a compact cabinet measuring 19x23x30 in. and is caster mounted and equipped with carrying handles on either side for easy movement from place to place as operations are completed.

Typical of Gebhard-Berghammer's use of the BondOtherm was the gluing of strips of veneer to a long counter in the St. Pius School Gymnasium. The glue was first brushed along the entire length of the counter edge. Then, starting at one end, the operator held the strip in position with one hand and walked to the other end pressing the strip against the glue with the hand gun. No clamps were required—the glue cured instantly as the gun passed over the strip. The job was done quickly and there was no need to go back over the strip filling nail holes and hammer misses.

When used as an alternative to nailing in securing 4x8-ft paneling, the operator reported no significant times savings in application, but there were no nail holes to fill in before finishing.

The glue recommended by the equipment manufacturer is Urac 185, an adhesive manufactured by American Cyanamid and packaged by the Nelson Co., Iron Mountain, Mich. It is extremely sensitive to an electronic field of the type set up by the BondOtherm and sets almost immediately under those conditions. The manufacturer of the glue reports tests which show that the bond when properly cured is stronger than the wood itself. Maple block shear tests show a tensile strength of greater than 2,800 psi with 100% wood failure.

Further, the durability of the urea-base adhesive is reported to be in direct proportion to the dimensional changes that may take place introducing stresses in the glue line—this applies to nails as well. It is estimated that the durability of the glue bond in interior application should last the life of the products glued. It is pointed out that for exterior applications, a resorcinol glue should be used with this type of equipment.

Urac 185 is also said to have excellent craze resisting properties. It will eventually form a good bond where the welding unit was not passed.

The BondOtherm used by the Milwaukee builders was a Model 1500-1½ kw. It operates on 115 volts, 50/60 cycles and takes ordinary house current. Price of the unit is $1,195 f.o.b. Milwaukee. Industrial Electronics Engineering Corp., 2223 N. 31 St., Milwaukee, Wis.

(*New Products continued on page 179*)

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BARCO RAMMERS

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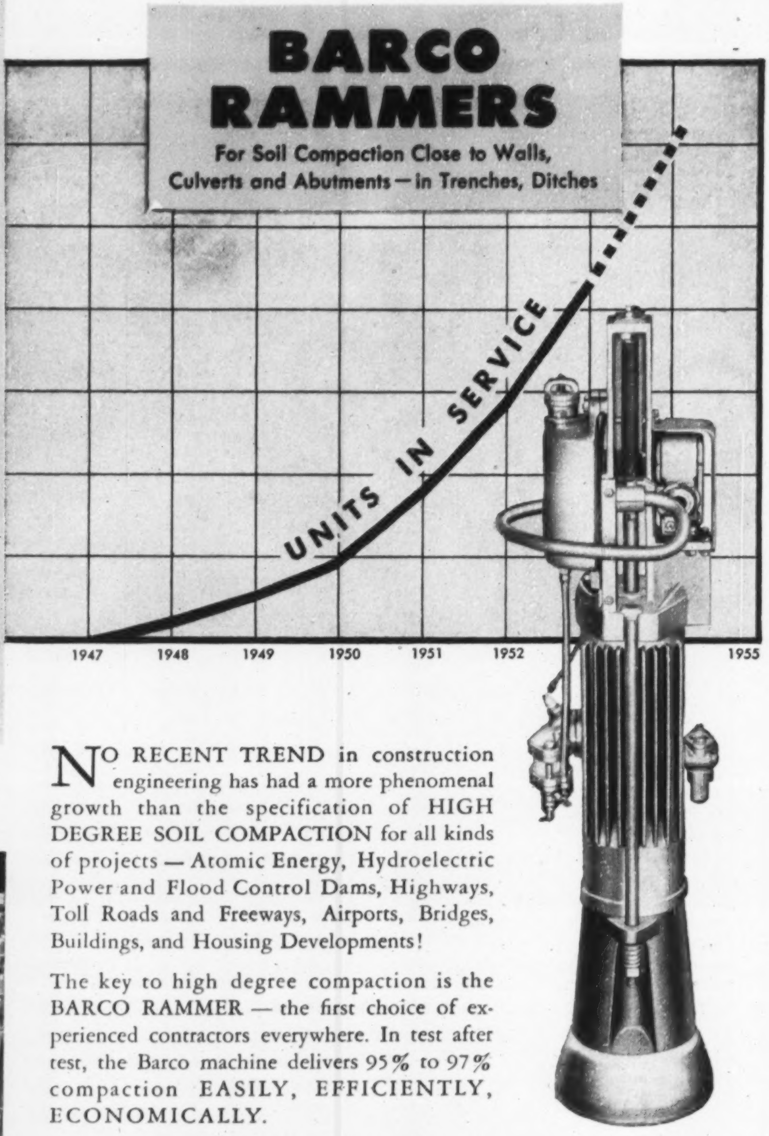

NO RECENT TREND in construction engineering has had a more phenomenal growth than the specification of HIGH DEGREE SOIL COMPACTION for all kinds of projects — Atomic Energy, Hydroelectric Power and Flood Control Dams, Highways, Toll Roads and Freeways, Airports, Bridges, Buildings, and Housing Developments!

The key to high degree compaction is the BARCO RAMMER — the first choice of experienced contractors everywhere. In test after test, the Barco machine delivers 95% to 97% compaction EASILY, EFFICIENTLY, ECONOMICALLY.

To meet the demand for Rammers, Barco has steadily boosted production schedules in a new and ultramodern plant. You are assured QUICK DELIVERY in 1954. *Send for latest technical bulletin on Soil Compaction and Barco Rammers.* BARCO MANUFACTURING COMPANY, 514F Hough Street, Barrington, Illinois.

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- ONE MAN OPERATION
- FASTER COMPACTION
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- LOWER INITIAL COST
- LOW OPERATING COST
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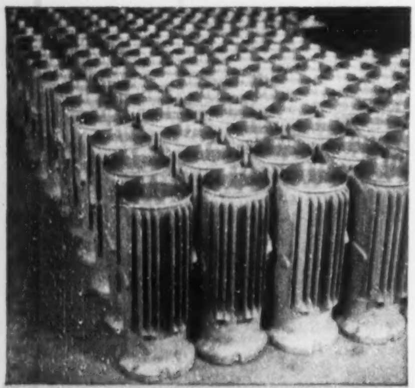
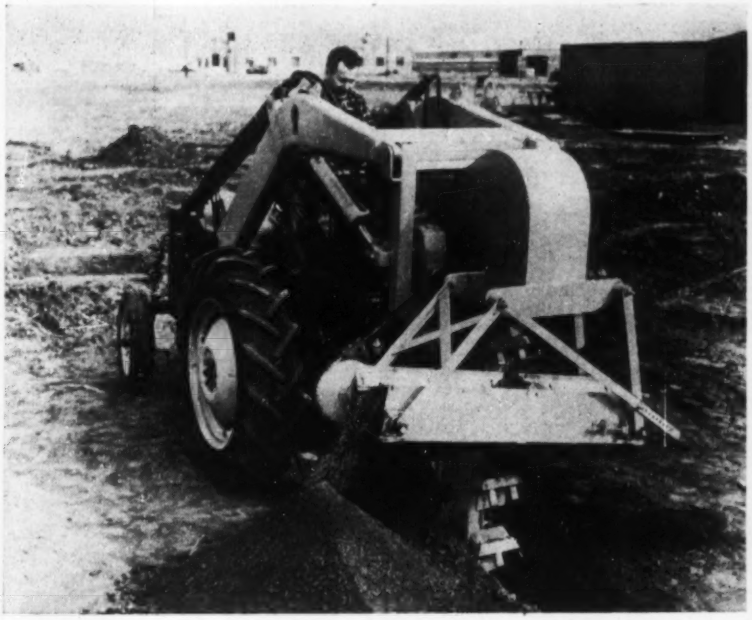
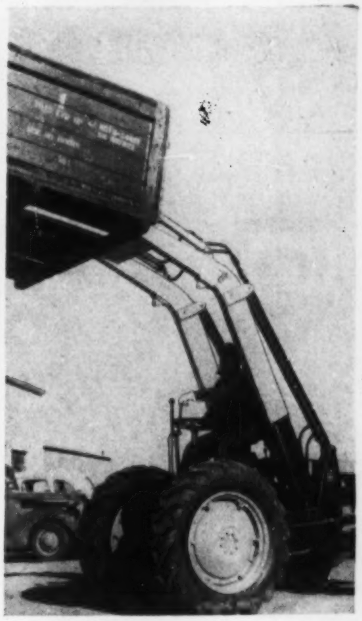


These cylinder bodies are being used in early 1954 shipments of BARCO RAMMERS. All machining, assembling, and testing of Rammers is handled in Barco's new Barrington, Illinois, plant shown below.

NOW! QUICK DELIVERY FROM FACTORY STOCK!





11-in-1 unit cuts equipment inventory

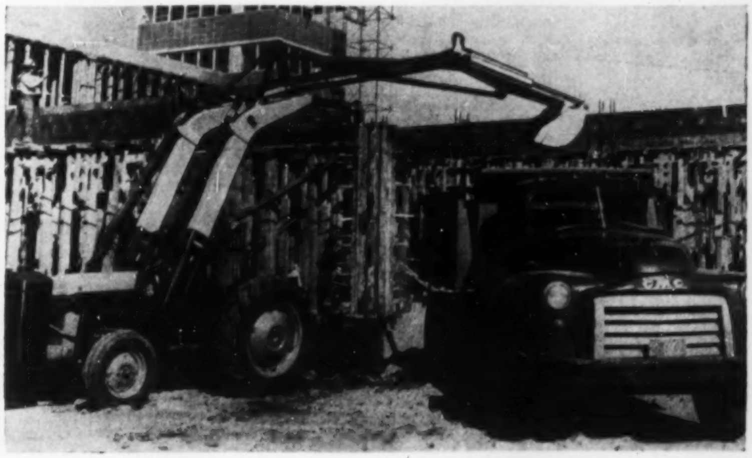
One basic unit—designed to fit Ford or Ferguson tractors—offers the unique possibility of 11 pieces of equipment for the price of one. Through the addition of attachments, the unit becomes a front-end loader, back-hoe, trencher, rotary broom, bulldozer, swinging crane, compactor, rotary mower, fork lift, hydraulic hammer or earth auger.

Called the Pit-Bull, the basic unit consists of a pair of hydraulically-operated sidearms fitted with another pair of hydraulic rams for positioning of attachments. A power take-off driven 15-gpm pump operating at 1,500 psi supplies fluid to the rams.

When equipped as a front-end loader, the Pit-Bull mounts a 15-cu ft bucket that measures 68 in. in width. Overall length in the down position is 15½ ft. while overall clearance in the same position is 68 in. The bucket is dumped at a height of 8½ ft while clearance height is 10 ft 5 in.

As a backhoe, the Pit-Bull has a reach of 16 ft and an operating arc of 8 ft to left or right of center. Digging depth is 10½ ft; dumping height is 10 ft 4 in. Two double acting hydraulic cylinders control boom swing and two others individually control the bucket and dipper stick. Bucket

(*Continued on page* 192)



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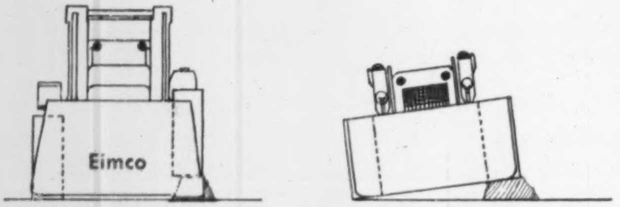
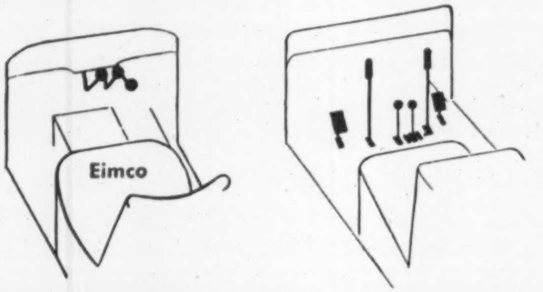
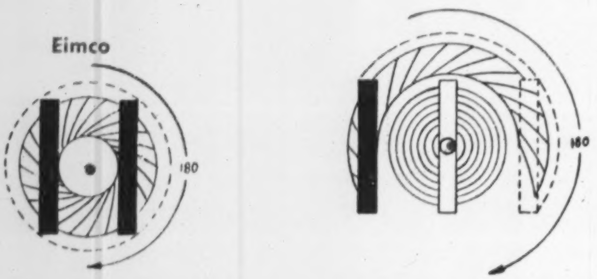


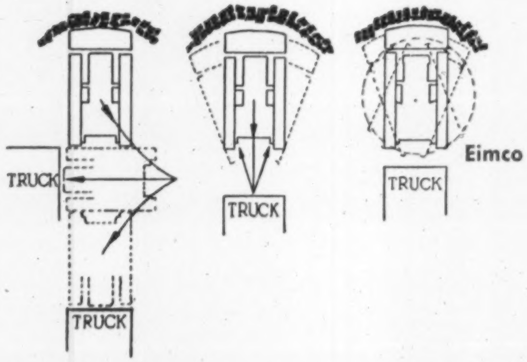
OSCILLATION — with loader attachment — exclusive on Eimco 105, this feature permits better loading on uneven floors in pits or stripping operations.



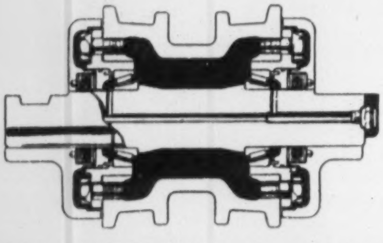
EASY SIMPLE CONTROLS — Eimco's easy finger tip controls give better maneuverability with less effort. Change speeds without stopping — instant reverse.



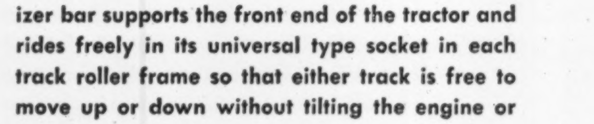
INDEPENDENT TRACK OPERATION — In a turn one track runs forward, the other reverse, cutting turning radius to a minimum. Eliminates excessive wear on track, rollers, idlers and track frame. On most machines one side is locked and skidded for a sharp turn.



MANEUVERABILITY — Faster loading into haulage units because of Eimco's overhead loading action and independently controlled tracks. Note trucks can be kept closer, cutting haulage time.



THE EIMCO 105 TRACK ROLLER — A one piece cast alloy steel roller with bearing cages and husky shaft on Timken roller bearings completely sealed against dirt and moisture. Careful heat treatment prolongs life and maximum grease capacity assures lubrication.



BETTER VISIBILITY — The operator sits up front where he can see. Loading, bulldozing or pushing are more efficient, eliminate guesswork.

Every feature of the Eimco 105 is designed for maximum customer service with minimum maintenance. One of these features is the full oscillating track EVEN WITH THE LOADER ATTACHMENT. This is an exclusive feature on the Eimco 105 since standard practice in the construction field is to tie the tracks rigidly when a loader is mounted on any tractor unit.

The full oscillating feature prevents excessive frame twist, wear on tracks, rollers, and idlers. Traveling on uneven ground the heavy equalizer bar supports the front end of the tractor and rides freely in its universal type socket in each track roller frame so that either track is free to move up or down without tilting the engine or frame.

This feature provides maximum ground contact under all conditions and maximum drive which is essential in good digging and loading.

Write for information to The Eimco Corporation, P. O. Box 300, Salt Lake City, Utah.

WITH COST SAVING ADVANTAGES

Above left: Eimco 105 digs in stock pile of chunky limestone. Above right: Two speed bucket mechanism loads light trucks easily and fills big trucks full. Below left: Loading rock from pit. Bottom: Clearing slide area after heavy rain. Below right: High discharge loads into high railroad cars.

THE EIMCO CORPORATION
Salt Lake City, Utah, U.S.A.
Export Offices, Eimco Bldg., 52 South St., New York City

sizes available are 14, 17, 24 and 32 in.

The trencher attachment is of the chain bucket type and may be used to dig 8, 12 or 16-in. trenches to a depth of 5 ft. Operation is all hydraulic including bucket drive and positioning.

An 8-ft wide, 34-in. dia rotary broom may be angled through a 60 deg arc by hydraulic rams. Drive is hydraulic.

The 72 x 22-in. moldboard of the dozer attachment may be used to excavate 2 to 4 in. below ground level for light grading. Tilt control is hydraulic.

The swinging crane attachment has an adjustable length of 48 to 72 in and is rated at 1,000 to 1,500-lb capacity. Loads may be lifted to 14 ft and swung through an arc of 100 deg.

A 45-in. wide, 35 in. dia roller is also available. With the tractor wheels in raised position—the roller forced down—the compactor is rated at 100 psi. Weight of the attachment is 950 lb.

The rotary mower attachment is equipped with a double set of rotary blades and will cut a 72-in. wide swath. It is hinged to the right side of the back frame and pivots out 180 deg so that it can be used as a side mounted mower in rough areas. Adjustable skids on each side determine the cutting height.

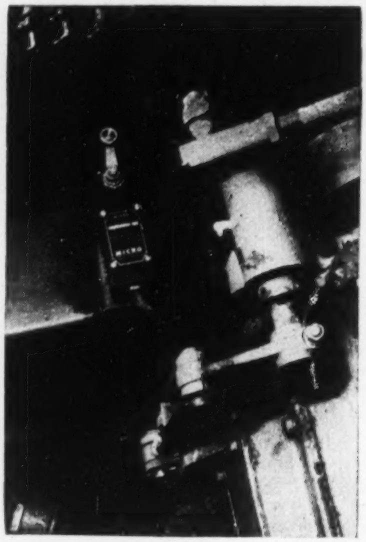
The fork attachment will lift a 2,500-lb load to a height of 10 ft. The 48-in. tines may be adjusted for 12 to 48-in. carrying centers.

A 350-lb hammer operating at 40 to 50 strokes per minute is also available. The hydraulic mechanism is rated at 1,500 ft-lb impact.

The earth auger is hydraulically driven and will bore a 10, 14 or 18-in. hole to a depth of 5 ft.

Installation of the unit is done by the manufacturer's distributors and includes reversing the driver's seat and controls and installing a Mid-Western synchro-mesh transmission between the clutch and standard transmission. With the special transmission, the Pit-Bull has four speeds in each direction, and the operator can change directions without shifting gears. MID-WESTERN INDUSTRIES, INC., 1009 S. WEST ST., WICHITA, KAN.

Electric counter improves control of truck mixing



A highly accurate electric counting device has been developed for truck mixers in an attempt to simplify the operator's job and provide more positive control of mixing.

The new counting device is a packaged unit consisting of a sealed, snap-action switch, a connecting and sealing device and a cylinder-type electric counter for use with either 6 or 12-volt D.C. circuits.

(Continued on page 184)

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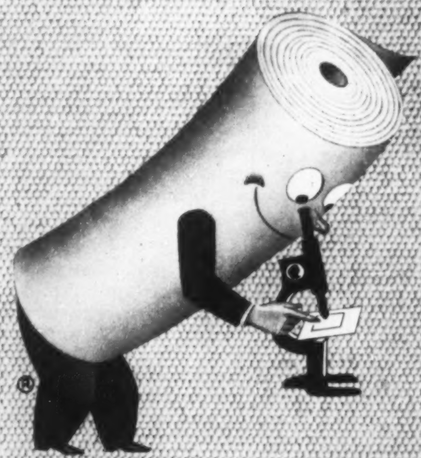

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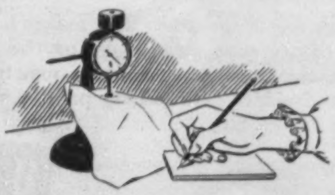

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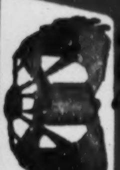

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The switch is mounted on the outside of the truck frame next to the mixing drum so that it is actuated once every revolution. The switch, in turn, actuates the counter located on the dashboard inside the cab.

The unit is reported to operate smoothly in a temperature range of minus 20 to plus 150 F.—MICRO SWITCH, FREEPORT, ILL.

New products briefs . . .

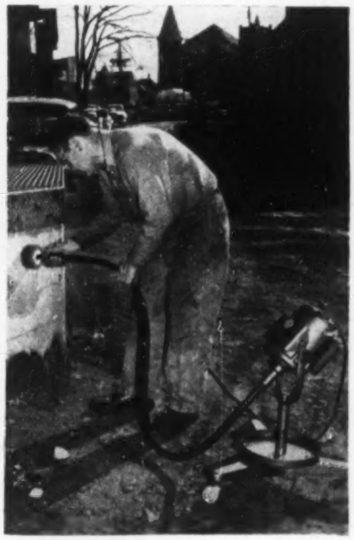
- **Pilot bit**—A new cone-shaped fishtail bit for use on all makes and sizes of post hole augers has been developed by Petersen Engineering Co., Santa Clara, Calif. It is claimed that the fishtail points of the Pengo, Jr., cone pilot prevents pivoting on rocks when encountered and the narrow fishtails will not walk but will penetrate hard surfaces such as hardpan.

- **Sandblasting nozzles**—A head for sandblasting nozzles that makes wet sandblasting possible without a high pressure water tank is being produced by the Sanstorm Mfg. Co., Fresno, Calif. The new wet jet nozzle head is an aluminum housing that fits on an adapter like a miniature water jacket hooked up to an ordinary house water faucet. The water jacket has openings that let the water escape in the path of the blast of air and sand. The new head fits only Sanstorm nozzles and nozzle holders and sells for $25.

- **Adjustable pilaster form**—Forming pilasters of varying sizes is said to be greatly simplified with the new adjustable pilaster form manufactured by Universal Form Clamp Co., 1238 N. Kostner Ave., Chicago, Ill. Adjustable for pilasters from 4 to 14 in. in depth in ½-in. increments and from 2 to 8 ft in height the new adjustable form is said to eliminate field fabrication and delay encountered in building such boxes.

- **Tie bolt casing**—Encasing tie bolts with plastic pipe before pouring a concrete wall makes it possible to extract the bolts later and use them over again. The process has been used successfully in tests by the American Molding Co., 355 Fremont St., San Francisco, Calif. The company points out that uncovered tie bolts often rust when left in the wall and discolor it. The company's plastic pipe is available in sizes ranging from ½ to 6 in. in diameter and in any length.

- **Welding torches**—Two new torches are now available from the Air Reduction Sales Co., division of Air Reduc-



Flexible shaft grinder features ready portability

Mounted on three legs with casters, the G40-C flexible shaft grinding machine can easily be moved on the job. The machine is available with either an open type or totally enclosed ¼-hp motor and is equipped with a 12-ft shaft—⅜-in. core—for use on ceilings or walls. The unit reported to be the lowest cost concrete grinder available—may be obtained with either wet or dry angleheads. Stow Mfg. Co., 19 Shear St., Binghamton, N. Y.

tion Co., Inc., 60 East 42nd St., New York 17, N. Y. Style 400 is designed especially for light welding and brazing operations and is 5¾ in. in length and weighs 6 oz. Style 300 is a lightweight torch designed primarily for oxyacetylene burning or welding of lead products. This torch weighs 5 oz and is 2½ in. in length.

• **Rock dipper**—A new "hopper type" all cast rock dipper that incorporates a streamline cutting edge has been developed by Electric Steel Foundry Co., Portland 10, Ore. The cutting edge has integral tooth horns to take solid manganese or alloy steel teeth or alloy steel two-piece teeth. Designed with this dipper is a patented wedge-type door and latch mechanism. The hinges are secured to the door by tapered wedges with shock-resisting rubber between door and hinges. The hinge design is said to eliminate slamming and with the improved latch bar assembly is adjustable through 28½-in. changes giving a full 7-in. of wear on the bar. Dipper is designed for use on a Northwest 80-D machine and weighs approximately 5,300 lb.

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PUBLICATIONS

Underground conduit—A new 8-page manual "How to Use Soapstone OCT-O-DUCT—a manual of field practice" is now available. Based on field experience with the first million feet of the new flat-sided underground conduit, the manual illustrates methods of preparing trenches, erecting duct structures, manholes and encasing. The booklet is designed to be used by construction personnel as well as by engineers.—SOAPSTONE DUCT CO., 110 LINFIELD DR., MENLO PARK, CALIF.

Specification writing—"Recommended Product Specifications for Structural Clay Units" is a brief treatise on the specifications that should assist in selecting the proper ASTM designation for the units to be used. The booklet is designed to help both the contractor and the brick manufacturer. CLAY PRODUCTS ASSN. OF THE SOUTHWEST, PERRY-BROOKS BLDG., AUSTIN, TEX.

Building stones—A unique 48-page stone catalog gives full color photographs of every type of building stone, detailed descriptions, characteristics and sources and also contains a complete classification according to dimensional stones, rubble stones and split face. A section also lists every trade name, color classification, company and quarry location.—STONE COUNCIL, OFFICE OF THE SECRETARY, 5351 WINTHROP AVE., INDIANAPOLIS, IND.

Rock drills—A new 8-page bulletin contains information on the Joy line of "Silver Streak" rock drills. Economy features are covered with detailed description, specifications and photographic Bulletin 87-X. THE JOY MFG. CO., HENRY W. OLIVER BLDG., PITTSBURGH 22, PA.

Hoists and derricks—A 16-page catalog contains information on the line of derricks, hoists, winches and elevating and hoisting equipment manufactured by SASGEN DERRICK CO., DEPT. E. 21, 3101 GRAND AVE., CHICAGO 22, ILL.

Reinforcing—A 24-page brochure describes the use of Steeltex for reinforcing concrete, mortar, stucco, and plaster. Examples of Steeltex applications to give strength and form to floors, roofs, ceilings, and walls, both interior and exterior, are described in full detail. Tables of weights, safe loads and cutaway drawings supplement photographs and editorial material. Pittsburgh Steel Products Co., Room 1404, Grant Bldg., Pittsburgh, Pa.

Portable asphalt plant—The new Madsen model 481 portable 4000-lb batch capacity asphalt plant is the subject of a new bulletin. The plant is described by sections. A complete plant is represented in blueprint style on the last few pages and its advantages are described. Madsen Iron Works, Inc., P.O. Box 578, Norwalk, Calif.

Stainless tubing and pipe—Bulletin TDC 160 contains information on the corrosion resistance of stainless steels as compared with corrosive media. The 8-page folder presents pertinent data on six widely used stainless tubing steels and several hundred corrosive media at various temperatures and concentrations. Tubular Products Div. The Babcock & Wilcox Co., Beaver Falls, Pa.

Bottom deck feed plant—A series of individual bulletins describes and lists the specifications of Pioneer's new line of bottom deck feed plants for gravel aggregates production. This new line consists of seven sizes of plants with model numbers and units as follows:

Model No.	Jaw Crusher	Twin Roll Crusher	Square Feet of Effective Screening Area
17-V	–1016	24 x 16	40
18-V	1024	24 x 16	40
24-V	1024	24 x 16	60
25-V	1036	24 x 16	60
39-V	1036	30 x 18	80
40-V	1036	40 x 22	80
46-VE	1036	40 x 22	96

The 46-VE is diesel-electric powered. Plant setups are shown and color diagrams trace the flow of material through the plants. The bulletins point out how bottom deck feed, a patented principle of aggregate production, can be utilized to obtain maximum efficiency from all the units in the plant through (1) balance of the loads between crushers without having to change screens and (2) use of two decks for specifications sizing thus doubling the effective screening area. Pioneer Engineering Works Inc., 1515 Central Ave., Minneapolis 13, Minn.

Silicones—A new technical brochure describes the theory, applications and benefits of special silicone resin water-repellent compounds for above-graded exterior masonry. Construction Specialties Div., Dewey & Almy Chemical Co., Cambridge 40, Mass.

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EDITORIALS

Problems ahead for the seaway

Congressional approval of the St. Lawrence Seaway bill, in the words of President Eisenhower, "marks the end of a long and historic effort." After more than 20 years of work by advocates of U. S. participation in the building of that deep-waterway project, Congress finally has agreed to finance and build part of the project.

Nevertheless, rejoicing among advocates of the seaway needs to be tempered by realization that this country still is some distance from actual participation with Canada in completion of the seaway. This fact has not been mentioned in news reports coming out of Washington, but it is very apparent in comment from Ottawa.

Chief weakness of the legislation just passed by Congress is that it is not the culmination of negotiations with Canada looking toward joint construction of the international section of the waterway. All the new legislation does is create a new agency called the St. Lawrence Seaway Development Corp., vest that corporation with power to issue bonds up to $105 million, and authorize it to cooperate with its counterpart in Canada. No agreement with Canada has been negotiated.

In 1951, the Canadian Parliament, abandoning hope of U. S. cooperation, created the St. Lawrence Seaway Authority of Canada and directed it to proceed with the design and construction of the remaining sections of the St. Lawrence Seaway entirely on the Canadian side of the river. Preliminary work on that project has been under way since early in 1952. It includes locks and canals around the Lachine and Soulanges Rapids above Montreal as well as locks and canals on the Ontario side of the International Rapids. In contrast the bill just passed by Congress, requires that the navigation facilities for the international part of the river be built "in United States territory." So it would seem that if Canada is to agree to let us participate in completion of the seaway, its plans must be changed to that extent.

Little definite information is available as to what stand the Canadian government will take on issues raised by the seaway bill. When advised of congressional approval, Prime Minister Louis St. Laurent told the House of Commons that his government is ready to discuss any suggestions the U. S. government may have to make concerning construction of the seaway provided the suggestions do not result in further delay.

Letting the U. S. take over all navigation work in the international section of the river actually should speed completion of the entire deep-waterway from Lake Ontario down to Montreal as it would permit Canada to concentrate on the Soulanges and Lachine sections. The total cost of that work is now estimated at $173 million.

Letting the U. S. participate to the extent of building navigation work along the international section also would cut the expenditures yet to be made by Canada by $88 million. Nevertheless, some Canadians are urging that Canada should complete the entire project, as planned by the 1951 legislation, so that it will have complete control over tolls. They cite the fact that Canada's total investment, including money already spent on the Welland Canal, will be around $300 million as against $88 million on the part of the U. S. Because of this large difference, they state, it would be to Canada's advantage to make the additional expenditure of $88 million to retain full control over toll rates. As to toll rates, the 1909 treaty requires only that they be the same for the ships of both countries.

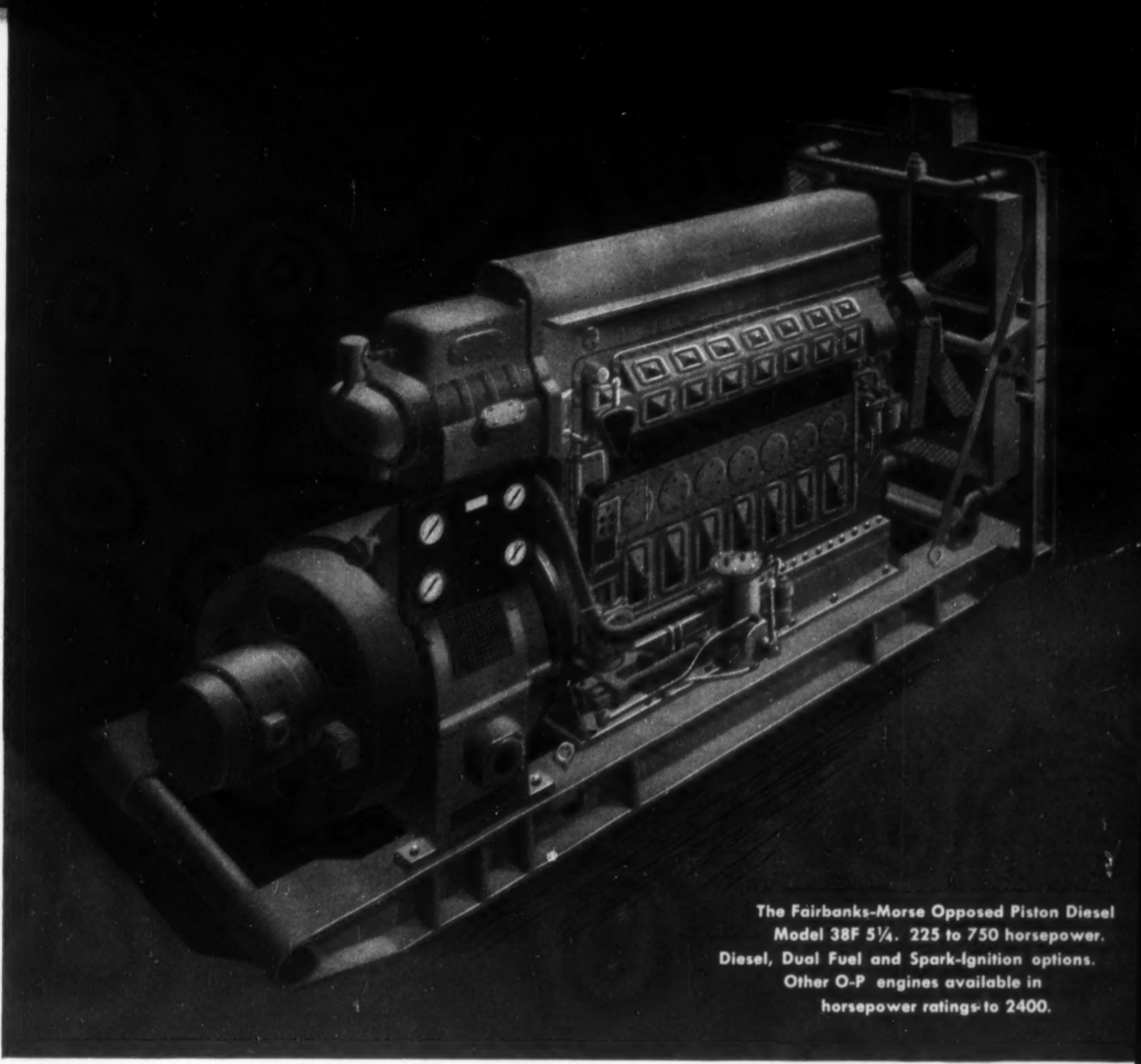
These are the problems that lie ahead for the seaway planning. They may slow up progress at the start, but no one of them can block completion of a project for which so many people have worked for many years. And there is still reason to hope that the proposal to complete the work as a joint undertaking will prevail.

Harold W. Richardson

He was a construction man, full and true. Harold W. Richardson, for 18 years the Construction Editor of this magazine, and for the last five years Chief Editor of its sister publication, Construction Methods and Equipment, would rest easy under such an epitaph. In a very real sense, he carved it himself, gaining meanwhile the warm friendship, admiration and confidence of literally thousands of construction men. His tools were words—meaningful, accurate words—born of an intimate knowledge of construction problems and processes. For "Rich" was a construction engineer and a construction superintendent before he became an editor.

It was perhaps a residual smell of printer's ink, lingering from the days when he worked his way through high school and college in the mechanical department of two Colorado newspapers, that drew Rich to writing. But it was his love for construction and his abiding faith in the men who manned it that channeled his writing to construction themes. Construction and journalism were both the gainers.

Rich had a prodigious capacity for friendship with construction people, and he reveled in their achievements, traveling everywhere to visit construction in the making. With foremen, superintendents and engineers he would sit up until all hours in a construction shack, arguing the merits or mistakes of a particular operation. And then he would return to the more lofty strata of the industry to contribute of his knowledge at the council tables of its readers. To construction Rich gave his fullest devotion, kindly, understandingly, and with great integrity and competence. And construction is the better for it.



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New portable plant produces 7½ tons of ¾″ aggregate per minute

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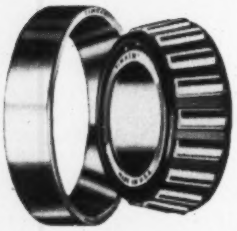

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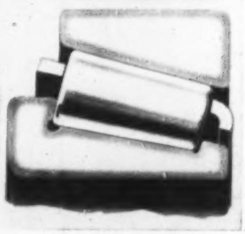

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